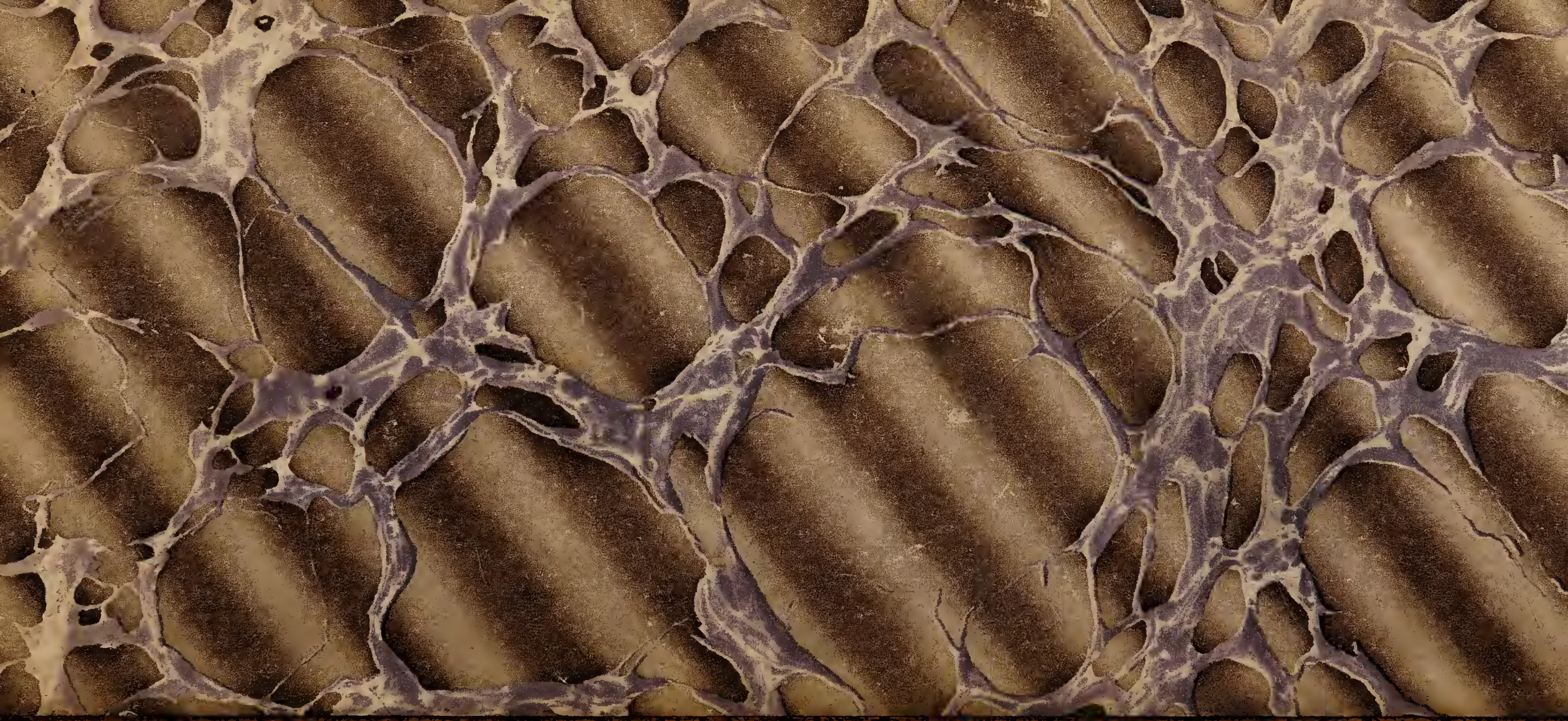


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A

DIRECTORY

Physico-Medical.

A

DIRECTORY

Physico-Medical,

Compos'd for the

USE and BENEFIT

Of all such as design to Study and Practise

The Art of Physick.

WHEREIN

Proper Methods and Rules are prescrib'd for the better understanding of that Art; and Catalogues of such Authors exhibited, as are necessary to be consulted by all young Students.

By PETER PAXTON, M.D.

Lactant. lib. 2. Divin. Institut.

Sed hoc eos fallit, quod Majorum nomine posito, non putant fieri posse; ut aut ipsi plus sapiunt, quia Minores vocantur; aut illi desipuerint, quia Majores nominantur.

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To all those who apply their Thoughts to the Understanding of Physick.

Gentlemen,

IT is you that are intitled to this Directory; for it is compos'd only for your Use, and publish'd for your Instruction. To ask therefore your Favour, is to question

your good Nature, as to ſeek your Protection, is to ſuſpect your Gratitude: for being yours by birth, it has a natural claim to your Care, in that it is a Duty for Men to provide for their Offspring; and coming into the World for your Service, it has a kind of right to your Patronage. Neither can you well diſown it by reaſon of any blemiſhes in its Form, or moles in its Feature (if really disfigur'd with ſuch) ſince your Characters will not ſuffer by its Imperfections, nor can your early Judgments be corrupted by viewing its Lineaments; there being not any thing contain'd in it, but what your Facultys will approve, which cannot deceive you. Beſides, it has this farther Plea for your Favour, in that it is the Mode or Humour of this preſent Age, or at leaſt in this Nation, to promote the Inſtruction of the Scholars of *Æſculapius* rather by the dead Writings of former Phyſicians, than by the Precepts or Practices of the living Profeſſors (a method by which few other Arts are learnt, and which even *Apollo* diſlik'd, who ſent his Son to *Chiron* to be inſtructed) and thoſe Writings being very numerous, and ſome of them voluminous, and abounding in Doctrines

which

which ſeem neither conſiſtent with Truth, nor with each other; that Art is thereby rendred difficult to be underſtood, and the Methods of learning it are perplex'd. And foraſmuch as it may be the unhappy fate of ſome of you not to enjoy the opportunity of being inſtructed by *Academical Methods*, which are moſt us'd and beſt recommended; therefore that, being left to your ſelves, you may not be altogether deſtitute of the means of underſtanding this Art, this *Directory* is compoſed to be as a Guide for the conducting you in the courſe of your Studys, and as a Rule for governing you in your early Practices (for when Experience hath furniſh'd better helps, theſe may be laid aſide) that ſo you need not by any fatal Misfortunes be hurry'd to lay your hands upon the Ark before you are fitted for ſo ſacred a work, and ſo like *Uzzah* be puniſh'd for your raſhneſs; the Lives of Men being of too vaſt importance to be entruſted with thoſe who do not underſtand how to preſerve them.

This being the reaſon of the Undertaking, I ſhall not trouble you with any farther Apologys in its behalf;

not that I am ſo vain to imagine it can ſtand upon the foot of its own merit; but that I am convinc'd ſuch trifles will never win you to a partiality in its Favour, and that it will ſtand or fall in your Eſteem, according to the Judgment you make of its worth. It is not improbable but that your Sentiments may be different concerning it; becauſe there are few things wherein Men univerſally agree, and none ſo uncouth but ſome will aſſent to, the reliſh of the Underſtanding being often as different as that of the Palate; and in both it is equally alter'd from very ſmall and unheeded Beginnings: for Mens Minds may every day be obſerv'd to be reconcil'd by uſe, to what at firſt they had no eſteem for; and from this reaſon ſome Men condemn what others approve, ſome deſpiſe what others admire. The poor *American* ſcoff'd at the *European* Follys, in traverſing the Seas, thro Storms and Dangers, in the purſuit of a Metal he deſpis'd: *Diogenes* prefer'd the ſunny ſide of his Tub to all the Greatneſs offer'd by *Alexander*: The *Indian Faquirs* undergo the ſevereſt Sufferings for Opinions, which Chriſtians believe a Sin to countenance: The *Hotentote* valu'd his

Country

Country Nakedneſs, his Bracelets of Guts, and his Food of naſty Garbage, before the Coſtlineſs of our Apparel, or the Daintys of our Tables. And ſo uncertain are Mens Judgments concerning the Excellency of Things, that no Shell of Learning, whether Sacred or Profane, was ever yet open'd, in which the Contents were by all allow'd to be pure Kernel; nor no Truths have yet been diſcover'd, which have not been queſtion'd and oppos'd: for ſuch is the power of *Education*, *Converſe*, *Principles*, *Syſtems*, *Hypotheſes*, *Intereſts*, &c. upon the Minds of Men, that Prejudices and Prepoſſeſſions from theſe will very often, even in deſpite of themſelves, bear down the moſt flagrant Evidences of ſenſe, and oblige Men, by falſe Gloſſes, even to aſſent to ſuch things as, in their own natures, are real Abſurditys; as may be inſtanc'd in ſeveral Philoſophical Matters, in which the plain Teſtimonys of ſenſe too often give place to imbib'd Opinions, and Men do blindly reject the Evidence of their own Facultys, by which Truth in thoſe Matters is only to be diſcover'd. I therefore dare not flatter my ſelf that this my Labour ſhould be exempted from the ordinary fate of Cenſure:

Cenſure: it will be a Favour, conſidering its Imperfections, if it undergoes no worſe than what is common to Books; more eſpecially in that it does not appear under the modiſh Trappings of flouriſhing Hypotheſes, which are almoſt every where receiv'd; but is only calculated to give Men a View of ſuch Truths as are more for uſe than ſhew: and which therefore, tho they may be receiv'd by ſome, yet will never be entertain'd by them. It is true, this Trifle has this Advantage, that being addreſs'd to thoſe who are unvers'd in the grounds of the Art, it is not ſo much ſubjected to the cenſure of Prejudice; foraſmuch as where there are no fix'd Opinions, there can be no Zeal for them.

In the compoſing of this Directory, I have follow'd ſuch Methods as ſeem'd to me moſt agreeable in the Deſign and Uſe of it; and in truth had there been a Diſpoſition in me to have been regulated in this Work by the Example or Authority of others, I muſt not have laid my hand upon the Subject, there being none that I have met with (that will deſerve the naming) unleſs *Moronus*, who have put their Sickle in this Harveſt;

veſt; and how little relation his bears to what is here treated, will readily appear to any one who will read both. Wherefore, if the Methods I have purſu'd in the handling this uncultivated Subject, appear not ſo methodical as ſome of you may expect, I ſhall only for excuſe ſay, that it is not only difficult to lay out Paths and Ways, thro Woods and Deſarts, for the Eaſe and Safety of others, but it is alſo dangerous, where Guides are wanting, to conduct thro hazardous Paſſages; neither can ſuch Roads be either eaſy or ſmooth, until they are render'd ſo by frequent Travelling: for notwithſtanding ſeveral learned Men have writ Medical Inſtitutions, and Medical Introductions; yet none, like the good *Samaritan*, have held out their hands to aſſiſt the weak Beginner, in the conduct of his Studys, for the underſtanding all that belongs to this Art. Beſides, had any of the Antients been thus favourable to Youth, yet if their Labours were grounded upon their own Hypotheſes (which it is evident they muſt have been) they could have been now of little uſe, in that modern Diſcoverys have abundantly prov'd the vanity of ſuch Doctrines.

Gentlemen,

Gentlemen, You are not in this Directory to expect a Syſtem of Phyſick, but only to have the ſeveral Preliminarys to, and Branches of that Godlike Art obſerv'd to you; and then you are refer'd to ſuch Authors as have treated upon thoſe Subjects. And in this there appear great Difficultys, in that the Authors refer'd to do uſually treat of ſuch things in methods agreeable to their own Hypotheſes, which are perhaps very remote from truth; beſides, *quot Authores tot pene Sententiæ*. Wherefore, as ſome remedy for theſe Inconveniences, I have firſt briefly drawn you a Scheme of what ſuch things are in their own natures, and afterwards I give you a Summary of former receiv'd Opinions concerning them; and then I refer to ſome Authors who have writ upon thoſe Heads, to confirm what I have offer'd. But in that Phyſick, like other Profeſſions, is overrun with pompous Superfluitys, which are not without Calumny to be weeded out, and which may ſometimes occaſion Misfortunes; therefore, that your Fortunes may not be endanger'd from this Rock, nor the Safety of your Patient hazarded by complying with the uſage of

the times, I have firſt obſerv'd what is uſeful, by which the pompous will be diſtinguiſh'd; the knowledg of the firſt concerns your Integrity, but the laſt often your Gain.

But that you may not be bewildred in comprehending the ſeveral Subjects treated of in this Directory, in which the Methods neceſſarily appear ſometimes interrupted, by reaſon of the Relations amongſt natural things, which are to be obſerv'd and explain'd: Therefore I ſhall here draw out the Lines of the Work, and the Methods obſerv'd in it, which I thought might be of advantage to young Students, becauſe of the variety of Topicks to be met with; ſome of which are treated in a very nice and philoſophical Method (which was not to be avoided, in that Proofs which relate to natural Subſtances are for the moſt part taken from very minute Inſtruments) which might occaſion ſome Confuſion in the Underſtanding, were there no ſuch Aſſiſtance for the conducting the Thoughts in this Work.

In the beginning of this Diſcourſe I have ſhew'd, from the very nature of the

the Materials which compoſe a Human Body, from the Elegancy of its Structure and Form, and a continu'd Flux and Change of its Parts, that it muſt be obnoxious to *Infirmitys*, which are *Diſeaſes*; and to a *Diſſolution*, which is its *Death*. And then I have prov'd, from the nature of the more perfect Brutes, and of the ſalvage Inhabitants of the Woods and Deſarts, that thoſe Legions of Diſeaſes which afflict Mankind in the *European* Countrys, are rather the Effects of our Luxurys and Follys, than the mere Frailtys of our Natures: And that as Phyſick is the means invented for the removing thoſe Evils which we draw upon our ſelves; ſo the uſe of Phyſick will increaſe as ſuch Evils multiply. And afterwards I ſhow, that as former Methods of inſtructing Men in this Art were more or leſs in proportion to the numbers of ſuch as practis'd it; ſo now they are too narrow, in that the Profeſſors of it have multiply'd as Diſeaſes have increas'd by our Luxury: And from this reaſon I deduce the uſefulneſs of this Work, *viz.* that thoſe who deſire to profeſs Phyſick may not fall into Practice, before they have any means of being inſtructed in the grounds of it.

The

The Preliminarys propos'd as neceſſary to be underſtood for the qualifying Men for the Practice of this Art, are firſt ſome Parts of Natural Philoſophy, *viz.* ſuch as principally regard the Affections common to Matter; the Heads of which are briefly recited and explain'd by Methods fully approv'd by Experiments and Obſervations; and then an Author or two are refer'd to, who have clearly treated of ſuch. The Authors I have choſe for this purpoſe may not perhaps be preferable to others: but ſince it was neceſſary to recommend ſome, thoſe nam'd readily occur'd to my Thoughts; and it is ſufficient for this purpoſe, that they have intelligibly explain'd theſe things. And after this I have given a Summary of former Opinions, and nam'd ſome Authors, to which young Students may have recourſe, if they deſire farther Information. And for this purpoſe, I have either nam'd ſuch as have had the brighteſt Characters, or ſuch as have treated of thoſe Subjects in different Methods; and this I thought to be moſt uſeful either for Information or Delight.

Under

Under the ſecond Head, the ſeveral Parts of a Human Body are treated; which Parts are reduc'd into Claſſes, and the Structures and Uſes briefly explain'd.

Under the third Head are rank'd the Subſtances conſtituting the *Materia Medica*, the Kinds of them enumerated, and Methods propos'd how they are to be known.

Under a fourth Head is compriz'd Pharmacy, or the Method of preparing Medicines, which is branch'd into two ſorts, *viz.* Galenical and Chymical.

Under a fifth Head, the Operations of Medicines are conſider'd, *viz.* by what Methods perform'd, and by what Inſtrument, and in what Parts they act, and by what ways their Efficacys and Virtues ariſe.

Under a ſixth Head Diſeaſes are obſerv'd, *viz.* in what Parts or Regions produc'd, and from what Reaſons diſtinguiſh'd and rank'd into Claſſes; their Natures unfolded, and the Methods pointed out by which they are to be remov'd.

And

And under all theſe Heads Authors are ſeverally refer'd to.

But foraſmuch as theſe things have uſually been explain'd by Hypotheſes, which were built upon very different Principles, and notwithſtanding there has been a variety of them; yet in that all of them have been founded upon the Principles introduc'd by *Hermes* and *Galen*, and in that the greateſt number of Phyſicians, whoſe Writings continue in Eſteem (for comparatively ſpeaking there are but few Chymiſts) explain'd the Phenomena of that Art by the *Galenical* Hypotheſes, and ſeveral Branches of that Doctrine are yet receiv'd: Therefore that you Gentlemen, who are only Students, may not be ignorant of the grounds of that celebrated Syſtem, which has flouriſh'd for Ages, and is not yet in ſeveral Inſtances rooted out (for *Galen*'s Doctrine, tho exploded as to the four Humours, *&c.* yet as to the peculiar Facultys of Medicines is ſtill cheriſh'd) I have given you a Summary of the Heads of that Doctrine, in the very Order I treat the ſeveral Subjects above-mention'd. And afterwards, for the ſame reaſon, I give you a Taſt likewiſe of that of *Hermes*;

and from theſe things you may readily perceive upon what ſandy Foundations (notwithſtanding the Character) that Art formerly ſtood.

Gentlemen, In the ſhort account given you of ſuch things as ſeem neceſſary for you to underſtand, I have ſtrictly confin'd my ſelf to thoſe Heads which directly relate to the Nature and Uſe of the Subject there intimated; and I always endeavour to perform this without taking a Biaſs from *general Words* or *admir'd Hypotheſes*: and whatſoever Inference I draw is grounded upon Premiſes ſufficiently prov'd by the Teſtimony of our Facultys; and it is only this kind of Knowledg that I recommend as uſeful in *Phyſick* and *Philoſophy*, and accordingly I have always obſerv'd theſe two Rules.

Firſt, To intermix no ſpeculative and chimerical Whimſies with certain and evident Truths; by which I underſtand ſuch things as have the full approbation of our Facultys, which are the only Inſtruments God and Nature have given us for this purpoſe.

Secondly,

Secondly, To treat of the Subjects here handled as Phyſical Agents, which proceed in their Operations by certain and regular Laws (unleſs otherwiſe interrupted) and accordingly I draw my Concluſions.

The Truth of this laſt Rule is too manifeſt to be queſtion'd, there being no Inſtances which will not convince us, that Nature acts regularly, the like always being produc'd by the like (unleſs by Violence interrupted) and all things being continu'd in an orderly Succeſſion. Beſides, ſhould not this be admitted, or were not things actually ſo, it would be to ſmall purpoſe for Men to weary their Minds, and toil away their Hours in the purſuit of what they could never know. *Phyſick* and *Philoſophy* would be only mere Amuſements; *Charms* and *Amulets*, *Croſſes*, *Words* and *Magick*, *Old Wives Dreams* and *Enthuſiaſtic Illuſions*, *Pricking at Fortune-Books*, and *throwing Chances* for *our Healths* or our *Lives*, would be full as reaſonable and uſeful as the juſteſt Methods and moſt reaſonable Applications. Therefore, *Gentlemen*, if you have any other thought of *Human Bodys* and *Medicines* than as

mere *Physical Beings*, you trifle away your time to study Physick.

And these things being thus perform'd, I afterwards entertain you with a Summary of former Opinions, which, if of no real use to your Practice, may notwithstanding be as Trappings or Ornaments to bedeck your Characters, and therefore may be us'd or neglected as they may conduce or not to the Purposes you have in view; for not being blended with what is absolutely useful, there can be no difficulty either in taking them into your Consideration, or intirely omitting them at your Pleasure.

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CHAP. I.

The Structure of a Human Body surprizing; wonderful it should continue without Disorders. 2. *The Organs of Brutes as curious as those of Men. Brutes not punish'd with Diseases as Men.* 3. *The barbarous* Indians *not afflicted with so many Distempers as the* Europeans. *Men naturally obnoxious to Diseases and Death. Many Diseases do not proceed from the Frailties of our Nature.* 4. *Wealth produces Luxury, and Luxury Diseases. Wealth excites Industry. Wealth the Source of Arts and Sciences. Arts and Sciences flourish when Wealth abounds, and wither when it removes.* 5. *Arts and Sciences of no Esteem in* Rome *in the Infancy of that Commonwealth. Arts improve Luxury, or remove the Evils proceeding from it. Physick of the latter kind. Diseases increase with Luxury. Physick flourishes when Luxury abounds. Physicians multiply by Encouragement. Reasons. Physick little esteem'd among barbarous Nations.* 6. *Wealth*

 increases

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The surprizing Structure and wonderful Uses of the Parts of a Human Body.

1. SO beauteous appears the Form, so curious the Structure, and so wonderful the Operations of the several Parts of a Human Body, that even the Great *Galen* (a Man not over-devout) observing and contemplating the elegant Fabrick of the Eye, was so far surpriz'd at the amazing Curiosities in that noble Organ, that instead of reasoning about such refin'd Phenomena from his belov'd, natural, and Peripatetic Doctrines, he falls into an Admiration of the Wisdom and Goodness of his Creator, and composes a Hymn in his Praise. But had that great Naturalist and celebrated Physician been assisted,

sisted, in his Anatomical Enquiries, with the helps of Tubes and Glasses (a Discovery reserv'd for latter Ages) which, by enlarging Objects, would have given him a brighter and more distinct View of the slender Filaments, the minute Vessels, the elaborate Texture, and various Configurations in the different Organs of a Human Body, which were undiscover'd and conceal'd to him and former Ages for want of such excellent Helps: He would have had the same reason to sing Praise to the Glory of his Maker, for his Wisdom and Goodness appearing in the admirable Contrivance of all the other Organs; there being not a part in this incomparable Machine, when survey'd by our Senses, assisted with such excellent Instruments, but carries the evident Marks of a Divine Architect, in that their Forms and Structures are as inimitable, as their Uses and Operations are wonderful. For if we consider the Substance out of which our Bodies are produc'd, it will seem astonishing how so many different Organs, compos'd and made out of such loose and disagreeable Parts as the Flesh of Animals, the Juice or Substance of Vegetables, or at least the Produce of somewhat of this terraqueous Globe, should so strongly unite, and so beautifully cement, as to form a Being adorn'd with such a variety of durable Perfections. If we reflect on the amazing Configurations in the internal Fabrick of the differing Organs, the Diversity of Actions, Uses and Operations, that each singly observes; and yet the several Habitudes and Relations they all bear to each other, in their jointly con-

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Chap. 1. curring, and mutually co-operating for the Use and Benefit of the whole Body, of which each is but a Part: If we contemplate the innate Slenderness of the small Threds and Vessels, their distinct Insertments, their imperceptible Cavities, their meandring Courses, cross and surprizing Windings, their being closely knit, and elegantly wove together for the constituting such a variety of Textures as is to be observ'd in the differing Parts; and yet notwithstanding all these wonderful Figures, how some nimble Fluid incessantly darts and runs thro their narrow and unperceivable Pipes: If we reflect upon the Diversity of Motion several Organs perform, to what different Uses they are design'd, and from what different Sources they arise, and by what a multitude of minute Instruments executed; and yet with what Order, Strength and Regularity perform'd (notwithstanding the intricate and narrow Passages they pass) If we consider how all our most surprizing Actions and Functions are made by Organs so nicely wrought, so curiously embroider'd, and so exactly figur'd, that they appear rather fitted for Admiration than Use: We must, I say, conclude with *Galen*, that these things are the evident Characteristicks of the Presence of some Divine and Omniscient Power, in that These are not to be deriv'd from such natural Causes as are thought sufficient to explain the Phenomena of ignobler Beings. And in truth, if we pretend to judg of these things by the Contrivance of our own Heads, or by the Workmanship of our own Hands, we must be confounded in

our Understandings, to conceive how a Machine, form'd out of so many weak and perishable Materials, and burden'd with such a Number of different Motions, Actions and Uses, should continue so long a Period of Time as the ordinary Life of Man, without any enormous Irregularities or Disorders.

The Bodies of Brutes, altho as curiously wrought as those of Men, yet not incident to so many Diseases.

2. And yet notwithstanding this, if we reflect upon the Proceeding of Omnipotency, in the moulding and fashioning the Bodies of other Animals, we may, in some measure, remove our Wonders as to the Elegancy and Uses of our own; since there are no Beauties, no Curiosities, no Delicacies of Work in the internal Frame and Texture of the Parts of a Human Machine, but the same, or an equal Skill, will appear in the Structure and Uses of the Organs of the more perfect Brutes; whose Lives, according to the several Periods by Nature appointed, are usually encompass'd with fewer Infirmities or Disorders than those of Men.

Barbarous Nations not punish'd with such Numbers of Diseases as more polite People.

3. If we remove our Observations from Brutes to those salvage Creatures, the Inhabitants of Woods and Desarts, in the remote Regions of the New World; who, not only by their outward Forms and Shapes, but also by an exact Conformity in the internal Structure of their Bodies, as having the same number of Organs, and those wrought and form'd out of the same minute Filaments and Vessels, and endu'd with the same Forms, and plac'd in the same Situations, and so fitted for the same Offices, Relations and Uses, do thereby give us undeniable Proofs that they are Offsprings

Chap. 1. of Human Race; altho by their Customs, Usage and manner of Living, they seem perhaps more to resemble Beasts than Men: We shall find this barbarous and unfinish'd part of Mankind (who have no Ambition beyond the Security of their Persons, nor no Pleasures beyond gratifying their Appetites, who are Strangers to the Luxuries that are pursu'd in more refin'd Countries) to spin out their Life to a certain Period of Years, without being punish'd with such a multitude of Infirmities, or tormented with such variety of Pains, as those who have multiply'd their Pleasures in voluptuous and flourishing Governments. We may therefore (if we will impartially consider these things) reasonably conclude, that notwithstanding the Almighty has fram'd our Natures after so nice and peculiar a manner, that the natural Oeconomy should not be capable of continuing beyond such a determinate number of Years; and, for that reason, has so form'd the Parts, that they should be obnoxious to Infirmities and Irregularities, which are Diseases, and which in truth are but the steps by which we descend to the dark Caverns of the Grave, in order to moulder into our Primitive Earth; to which, sooner or later, according to the different Temperament of our Natures, we must all infallibly descend; in that the Parts and Organs of our Bodies, like those of other Animals, will, in a certain period of time, weaken, impair, and at last dissolve; by which all the glorious Faculties will be blotted out, and all the beauteous Forms will vanish; and that Body which was the Glory of

Men, altho by Nature obnoxious to Diseases, yet most Diseases proceed from our manner of Living.

of the Universe, will be but as common Dust; and yet notwithstanding that Diseases, and even Death it self, will thus insensibly creep upon our Natures, in that our Bodies are mortal: Yet from what has been observ'd, it appears pretty manifest, that most of those Legions of Miseries and Diseases which afflict Mankind in these *European* Countries, are not to be so much deriv'd from any Frailties or Infirmities of our Nature, as from our Faults or Follies, our Vices or Vanities, our Pleasures or Luxuries in our Methods or Usages of Living; because such Diseases are not known or observ'd among such simple and barbarous Nations, where refin'd Vanities are neither valu'd or practis'd. For those poor and despicable People, worn out by Time, and bending under the weight of Age, gradually and quietly descend to their Graves, if not suddenly swept away by acute and pestilential Diseases, or by an untimely Fall from the bloody Hands of their neighbouring Enemies: for such People rarely languish away their miserable Hours under the piercing Torments of the Gout, or the raging Pains of Stone, Cholick, *&c.* Such lasting Miseries being only found to be the Punishments of refin'd Luxuries; *Dolor & Voluptas invicem cedunt.* Chap. 1.

Wealth produces Luxury, and Luxury Diseases.

4. And tho Men living under the benign Influence of happy Government, where Numbers increase, and Wealth flourishes, will naturally invent Pleasures, and find out new Luxuries and Vanities to distinguish their Fortunes, give a Difference to their Qualities, a Lustre to their Honors, from whence

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like *Pandora*'s Box, Miseries are let loose upon Men, *viz.* Diseases to afflict their Bodies, Disquietudes to torment their Minds, and Vices to corrupt their Manners; yet so equally are things distributed among Men, or at least such a relation do they bear to each other, that as Diseases are introduc'd by Luxury, and Luxury by Wealth; so by the means of Wealth, Remedies to remove those Mischiefs are invented, and Antidotes against such Poisons discover'd. For as no number of Men can continue and flourish in a Society, without some Order or Government; nor no Government without some Superiority in Persons; nor no Superiority without some Inequality in the Wealth and Fortunes of Men; and Wealth being what is most valu'd among Men, becomes the means to instigate and excite Men to Labour, Study and Industry; either to invent new Pleasures, Vanities or Luxuries, or to procure Remedies to remove the Evils or Mischiefs which grow upon us by the Frailties of our Natures, or are acquir'd by our own Vices or Follies: Here then appears the Head of that *Nile*, which tho unknown or unobserv'd, has long water'd the fruitful Soil of Industry: Here is the Source which, with its Silver Streams, has continually cherish'd Ingenuity: Here is the Fountain, by whose Waters barren Heads have been made fruitful. For where there is no Wealth to reward, there can be room for little Care, and less for Industry; but a general Supineness will overspread Industry, and a general Ignorance darken the Minds of Men: for what Motive can there be for Men to

Arts and Sciences encouraged by Rewards.

From what Source Arts and Sciences flow.

to weary their Thoughts, and haraſs their Heads, in diſcovering and improving what can be of no advantage to them? What Emulation can there be for Honour or Authority, when Wealth is wanting, upon which both are originally founded? It is from this reaſon that Arts, which employ Mens Heads and Hands, and Sciences which inform or amuſe their Underſtandings, never are planted, neither can they grow or increaſe in any Soil but where they are cheriſh'd by the kind Rays of Authority, and water'd by the Silver Streams of Encouragement. And this is no ſpeculative Whimſy, but a Truth abundantly confirm'd by Obſervation, in that, whereſoever they have as yet flouriſh'd, when once Rewards have been remov'd, they have ſoon wither'd, dropt their Fruit, and periſh'd: And in ſuch Countries where the Scantineſs of their Numbers, or the Confuſion of their Government has given no value for Wealth, Arts and Sciences have never been planted, nor indeed if they were, would they take root and increaſe.

Always flouriſh when Wealth abounds.

5. This, I think, appears evident from all Governments, whoſe Origin, Growth or Decay are recorded in Hiſtory. In the Infancy of *Rome*, when her Citizens were overſpread with an univerſal Poverty, there appears to have been but little Value for Arts, or Eſteem for Sciences; for her Nobles were ſatisfy'd with the Conveniences, and her Commons with the bare Neceſſaries of Life. The Paucity of her Inhabitants, and the Smallneſs of her Dominions, did not furniſh Materials for Luxury and Exceſſes:

Few Arts or Sciences in the Infancy of Rome.

But

Chap. 1. But as her Wealth with her People and Conquests increas'd, her Citizens forgot their early Poverty, and despising their former Parsimony, became poison'd with the Vices, and tainted with the Vanities of other flourishing Nations: They soon gave Proofs that the celebrated Virtues of their Infant State were not the Effect of great and heroick Principles, but of the narrowness and meanness of their Fortunes, in that they renounc'd and despis'd them as soon as they had an Opportunity of inlarging their Dominions. The Nobles then with a pompous Grandure distinguish themselves, and the Commons, mov'd with that Lustre, thirst with a Desire to emulate them. The *Toils and Cares*, the *Labours and Sufferings*, the *Parsimony and Want* undergone in their Infant State, are now either contemn'd or forgot: *Ease* and *Affluence*, *Feasts*, *Plays*, *Musick*, *Shows*, and all manner of *Luxury* and *Voluptuousness* employ their Hours; by which their Minds are poison'd with Vices, and their Bodies soften'd for Infirmities, and subjected to Diseases. Sciences now are esteem'd and encourag'd, to amuse their vacant and unimploy'd Hours: Arts are now invented, multiply'd and incourag'd; some to find out and bring in new Expedients for Luxury, and others to refine and alter such as are already in use; some are favour'd and honour'd, in that they are esteem'd useful to remove such Pains or Evils, such Infirmities or Misfortunes, as their Luxuries or Excess have introduc'd. It is from this last that the Physicians Art in the flourishing State of *Rome* was cherish'd, and its

The Roman Virtues the perfect Effects of their necessitous Condition.

Arts and Sciences flourish'd in Rome, *as Wealth and Luxury increas'd.*

its Professors honour'd and amply rewarded: whereas in the early State of that City, it was either not known, or not esteem'd. The same may be observ'd of the *Grecian* Cities and Government, and of all the flourishing Communities that are at this day in *Europe*; in all of which Luxury and Excess have multiply'd with their Wealth (tho perhaps in different Methods) and Diseases have increas'd by their Luxury: and Physick therefore, as a Remedy for such Evils, has, in some proportion, been countenanc'd, cherish'd and honour'd. It is from this reason that, in all flourishing Countries, the Number of the Professors of Physick do naturally multiply, and for the same reason always will. For who is there of Human Race so insensibly stupid, but sighs for Ease when in Pain, and loaths Infirmities which exclude him from any relish of Pleasures, and are steps that lead him to the dark Chambers of the Grave? Who is there that softens his Hours in Luxury, but is startled at the appearance of grisly Death, and therefore ready to part with his Wealth to reward those who, he believes, are able to remove the first, and prevent the last?

Physick for what Reasons encourag'd.

Whereas *Luxurys and Excess, a sedentary Life, Tenderness and Softness* in Manners (from whence the greater part of Diseases that fall under the Physician's Care are deriv'd) are usually Strangers to the Dwelling of those innocent People who are unacquainted with the use of Wealth: And therefore as such are not punish'd with those Diseases, which their wretched Circumstances will not produce; so there can be no reason to use Means

Where no Luxury, Physick not regarded.

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Means or Medicines to remove Infirmities that are not known. It is from this reason that Physick is neither valu'd nor understood among such Nations; and of consequence its Professors are neither dignify'd nor rewarded, and therefore will not multiply.

Luxury increases by Trade.

6. Trade now in *Europe* has the same Influence upon Nations, as Conquests had in *Rome*; for People flourish in Wealth, proportionably as they increase in Trade: And Trade, like a mighty Abyss, altho Men can fix a Center, yet they cannot measure its Extent, nor put Limits to its Circumference; for being founded in certain Relations among Men, it may for ever, according to the differing Circumstances of those Relations among distant Nations, either alter, multiply or increase.

Luxury in England *has spread by Trade, and the use of Physick by that means increased.*

Trade in *England*, in the last Centuries, has wonderfully prosper'd and inlarg'd, by which means her Wealth has increas'd, and all its Off-spring multiply'd. Physick therefore, for the Reasons above specify'd, altho insensibly, yet from natural and regular Causes, has receiv'd Encouragement, and its Professors have accordingly become more numerous: For the Prospect of being rich invites Men, like the Golden Fleece, to embark in troublesom Voyages, to sail in dangerous Seas in quest of the rich Prize, before they are perhaps acquainted with the hazard of the Voyage, or instructed in the use of the Needle; by which means they become bewildred in their Course, may be split upon a Rock, or cast upon some unknown Coast. Former Ages had instituted Methods to fit

fit Men for Practice in this useful Art (for it was not then thought proper that the Care of Mens Lives should be entrusted to Persons, till they were fully instructed in the Methods of preserving them) which were in due proportion to the number of Physicians that the Circumstances of those early times requir'd: for Intemperance in their Lives, and Softness in Education, had not then so much corrupted the Health of their Ancestors. For notwithstanding former Ages had undoubtedly their *Vices, and Intemperance and Luxury* were cherish'd amongst our *British* Ancestors; yet the Nature and Circumstances of those early times did not permit Vices and Excesses to descend among such Numbers as the present; because *the Wealth, which in those Ages was the Land*, was confin'd to narrow Bounds, the Alterations of Tenure not having so much divided the Soil, nor Trade having introduc'd so much Personal Wealth. For which reason, notwithstanding that rich and great Men, and their Followers, then liv'd voluptuously, and so drew upon themselves the Infirmities that are the usual Attendants of such Lives; yet these were but few in proportion to the Numbers now: and so of consequence there was not Encouragement for Students in Physick to multiply, as they have done in these last Centuries. The State and Circumstances of *England* being thus by time alter'd, those former Methods, for the Reasons already urg'd, are now too scanty and narrow; there being in this Age more Persons imploy'd and maintain'd by the several Branches of Physick, than

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than can be initiated in an Age according to such former Methods.

The Care of Mens Lives not to be trusted to such as know not how to preserve them.

7. Physick, like all other Arts, is only learnt by Experience, a Man being no more born a Physician than he is a Mathematician; it is only *Observation, Sedulity, Use and Application* that can fit him for so useful an Employment. And as Knowledg and Skill in this Art is originally and only to be gain'd by Practice and Observation; so the Practice of it (in that the Lives of Men are concern'd) ought not to be permitted to any Persons, till a competent Knowledg is acquir'd, sufficient to guide them in the pursuing those measures which may do some Good, but no Mischief, to such as are committed to their Care. And since the Custom and Usage of the present Age does not favour the initiating Men into the knowledg of this Art, under the Guidance, Direction and Practice of such as are Masters of it; but rather that those who are to profess it, should inform and qualify themselves by notional Hypotheses, or at least be instructed by the Rules or Writings of others which are left for this purpose: And since these are not only numerous, but some of them voluminous, often treating of very different Subjects, and sometimes of the same in very different ways; and so frequently intermixing speculative Whimsies, and chimerical Hypotheses, with practical Observations and useful Truths; by which means young and unexperienc'd Men are bewildred and perplex'd, as wanting a Thread to guide them out of this Labyrinth: And since they are only to be directed by

Some Reasons for new Methods to instruct them.

by Rules and Instructions, collected out of the Writings of a multitude of Authors, by which they are often under some Difficulties where to set out, or begin in their Studies, what Roads and Ways to pursue, what Authors to read, with which to begin, how to rank and order them, what Materials to collect, and what to reject, what things are really useful, and what only pompous: And since they want some Directions to assist them in these Studies, and may too often (till by Experience they are better inform'd) in lieu of useful Truths and practical Observations, only store their Heads with a jumble of useless and confus'd Notions, and adorn their Discourses with a multitude of exotic and insignificant Words, which may be of some use to amuse their Auditors, but none to relieve their Patients. These things being so, Chap. 1.

8. The Design of this Discourse is to offer some Remedies for the removing of these Misfortunes, which must be acknowledg'd to be great, in that they so nearly concern the Lives of Men; and for this purpose to draw out a Scheme of Study for such Persons, as applying themselves to this useful Art, have not the advantage of better Helps to instruct them. *The Design of this Treatise.*

And that such Persons may not be discourag'd by the Numbers, nor discountenanc'd by the Difficulties which are usually thought to be contain'd in the understanding such things as appertain to this Art, I have first only hinted at, and observ'd such Topicks as I presume to be absolutely and perfectly necessary to be known, before *What Methods observ'd in this Work.*

Chap. 1. before they can reason or make Judgment either of the nature of Diseases, or the use of Methods or Medicines for the remedying them; and therefore ought to be understood before Men presume to take the care of Mens Lives into their hands. And afterward I have briefly recited such things as may give them some Pleasure to know, in that they are the vulgar receiv'd Opinions of those Physicians who liv'd in former Ages: and may likewise add a Lustre to their Reputation, in that they can produce Authorities to countenance their Proceedings; which usually in Physick bear a greater weight, than the livelier Reasonings or cleareſt Evidences drawn from the Nature of Things. And these latter therefore are but as Trappings and Embroideries to embellish and adorn this useful Art, and contribute more strictly to amuse the thoughtful, and to amaze the unthinking part of Mankind, than to add any real Benefit to it.

A Physician is a sort of Counsel to the Sick.

9. A Physician is a sort of Counsel to the Sick: for he is to judg of the State of his Body, and of the Nature of his Disease; he is to give such Rules for his Regimen, as may be for his Safety; he is to direct what is fit for his Food or Drink; he is to prescribe what Medicines he is to take, and what Methods to observe; and therefore is as far answerable in Honour and Conscience for the Life of the Diseas'd (so far as his Art can avail for his Safety) as a Master of a Ship is, who has the Government and Conduct of a Vessel committed to his Care and Charge: Wherefore it highly behoves him,

Answerable if the Patient suffers by his Ignorance or Inadvertency.

him, as he tenders the Lives of Men (for whose Miscarriage, if by his Fault, he is answerable at the great Tribunal of the Almighty) thorowly to inform himself in such things as are necessary to be understood, for the carrying him thro all the Difficulties and Dangers that will naturally attend him in this great and useful Work. He must not be satisfy'd with a raw and superficial Knowledg of *Receipts and Medicines, of Diseases and their Cures*; but must sedulously look into the nature of things, that by heedfully observing such, and diligently weighing and comparing them, he may be qualify'd to avoid those Shelves and Rocks, those Hazards and Dangers which will often occur and appear in Diseases. For as it is impossible for one that has the Conduct of a Ship to direct his Course to a Country which he only knows by Hearsay, being neither acquainted with the Longitude or Latitude; nor to avoid in the Run, Rocks or Sands he never heard of; nor to manage the Vessel in a Storm, when he is unacquainted with the use of the Tackle: so it is as impossible for one who practises Physick to direct or advise his Patient in the chusing or refusing those things, as Food or Physick, which may be necessary for the carrying him thro Sickness with Safety, unless he first understands the Nature of Diseases, and the Uses and Operations of Medicines, and the several Relations they bear to Human Bodies.

Chap. I.

Incumbent upon him to inform himself before he presumes to practise.

For as in Navigation, tho the Steerage and Guidance of a Ship be strictly and properly learnt by Practice and Experience; yet Men seldom arrive at any great perfection in

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that Art, unless they have a previous Knowledg of such Arts as seem perfectly necessary for the full understanding of it: For how can they carry her to distant Countries, unless they are acquainted with the use of the Globes, and so know the Longitudes and Latitudes? How can they guide her by the Course of Sun and Stars, unless they have some knowledg of Astronomy? How can they understand their Run, unless they know the use of the Needle and Compass? And how can they comprehend these things, unless they are instructed in the Mathematicks?

What's to be understood before Men practise.

So in Physick; How can Men pretend to remove or cure Diseases, unless they first understand what they are, where they reside, and in what they consist? How can they rationally prescribe Medicines, if they understand not their Operations? Or how can they expect any Advantage from such, if they do not consider the relation between the Disease and the Operation? How can they safely direct Regimens, if they do not comprehend the use of such? And how can they be qualify'd to do any of these, unless they have first observ'd and consider'd the Nature, Properties and Functions of a Human Body, the common Subject in which these things are to be transacted, and to which they only relate?

Some Principles or Fundamental Truths necessary to be known.

And it is more than probable, if Men would take the same Measures in Physick, as they do in the Mathematicks; that is, would begin and set out from *simple, easy, intelligible and certain Principles*, viz. such as are discover'd or deduc'd from the undoubted

Testimony

Testimony of Sense, and so are neither to be suspected, question'd or disputed (Sense being the only Criterion that God and Nature has in this World given to Men, whereby to try and judg of the Truth of such things) and not from any trifling *Hypotheses*, *Authorities*, *or any common Maxims*, which consisting of complex Words, are apt, by reason of an equivocal Sense, so often to mislead Men: and if from such beginnings they would gradually proceed to unravel and explain more difficult Theorems, they might carry Physick to a height of Certainty, if not equal to the Mathematicks, yet far superior to its present State. Chap. 1.

Man's Body the Subject, and Medicines the Instrument us'd in this Art, but small Fragment of the Universe and to be consider'd as such.

10. For if the subject Matter, *viz.* the Body of Man, and Medicine the Instrument employ'd in this Art, are but Parts or small Portions of this mighty Universe, and do really as such partake of the common Nature of that Mass of Matter, which composes this vast System: Then it is evident that the Properties or Powers belonging to either (so far as they relate to the Operations which affect each other) are under the same common Laws and Rules which are observ'd in the other Parts of Matter, and therefore to be explain'd in the same Methods. And then, for instance, it will not be very difficult to discover as *simple and certain* Principles to build this Art upon, as have been found out in the Mathematicks, by which that Art is carry'd to such a height of Certainty; and so it's not improbable but that this likewise may, by the same Helps, when diligently pursu'd by the same Methods. As for example, How may Men from

Not difficult to find Principles to build this Art upon.

Chap. 1. the Consideration of a Point (without regard to the perplexing Question of its Divisibility or Indivisibility, the asserting either of which inevitably leads into some Absurdities) easily comprehend how a Line from the motion of that Point will be generated, and how the motion of that Line will produce a Superficies, and this a Solid? Men may likewise be readily shew'd, how that two Lines touching in a Point will form an Angle, and how that Angle may be narrow'd or inlarg'd by the Motion of one Extreme of such Lines; how likewise a Circle may be generated, and how the Properties of a Triangle and Circle will arise. And as by these easy Steps Mens Understandings are gradually rais'd to comprehend those things, which seem to others incomprehensible; so likewise in the consideration of natural Substances, if Men would consider a Particle of Matter, without perplexing themselves with what they are no way fitted to know, *viz.* whether it has Parts, extra-Parts, or is farther divisible or not; if they would consider it as separate, or as united to others; as moving, or at rest: they might from these simple and easy Beginnings, raise their Understandings to such a degree of Knowledg as to comprehend things in Physick, which far transcend what they, who have not diligently consider'd these things, can't easily be perswaded to believe.

Objection. But perhaps it may be objected, That our Senses, to whose Testimony in these Cases we can only appeal, give us a full Evidence that Geometrical Figures may be generated by the Motion of a Point, and so their Properties

ties by that means to be demonstrable: But that our Senses can give us no Evidence that natural Substances are produc'd by such Particles, because such Particles are not to be discover'd by our Senses. Chap. 1.

To which may be answer'd, That our Senses give us a full Testimony, that Substances are form'd of such Particles, in that they visibly increase by invisible Parts; and sometimes in the same manner decrease, and may likewise be resolv'd into Parts too minute to be singly perceiv'd. However, if our Senses be assisted with Tubes and Glasses, the View of the internal Structure of most natural Substances, will sufficiently confirm that they are so form'd; as the young Student may find admirably made out by the curious *Lewenhook* in his *Anatomia, seu Rerum Interiora*. *Answer.*

CHAP. II.

The Body of Man the Subject of Physick. The Frame and Uses of the Parts to be enquir'd after. A Human Body a part of common Matter, obnoxious, like other Beings, to Infirmities and Alterations. 2. *Some Affections common to Matter in all States and Conditions. Others proper to this or that Substance. Forms and Qualities arise from the Disposition and Modification of the Particles of Matter.* 3. *Proper Appellations to signify the Parts and Operations of Human Bodies. Words mislead Men.* Galen *and the antient Physicians treated a Human Body as a part of the Universe, and explain'd its Phenomena by natural Principles. Human Bodies obnoxious to Diseases, and to be consider'd under a threefold Capacity.* 4. *Two Substances the common Parents of all sublunary Beings,* viz. *Earth and Water: These two Elements, tho very different, yet agree in some common Affections.* 5. *What Affections of Matter proper to be consider'd. Natural Substances in what they differ from each other. Forms and Qualities, from what they proceed. Substances distinguish'd two ways, by their Qualities, or by their Operations.* 6. *An Idea of these things to be acquir'd by Experience or Reading. Senses furnish Examples.* 7. *Men rarely make these useful Observations, unless entic'd to it by a Pleasure in reading Systems or Histories. The*

true

true Use of these to prepare Men for this purpose. Authors, for Use and Pomp. Chap. 2.

1. IT will become him who employs his Hours in the Study of Physick, with a Design to be useful to Mankind, either in the preserving of present, or restoring lost Health, thorowly to inform himself in the knowledg of such things as are preparatory for the understanding that Art, before he presumes to apply himself to the Practice of it: For this purpose he must diligently inquire into the Nature, Structure, Uses, Relations, *&c.* of the several Parts of a Human Body, which is to be the Subject of his future Care. And because it will be difficult to form Ideas of these things, unless he is previously acquainted with the Nature of that Substance, out of which Human Bodies, and all other sublunary Beings are prepar'd; it will be convenient for him first to inquire into the common Affections of that Mass of Matter, which furnishes Materials for composing all such natural Beings, which every where make or fill this our terraqueous Globe. For as a Human Body is only a small Portion of that Matter which composes this our World (notwithstanding the Beauty and Elegancy of its Form, and the Excellency and Perfections of its Faculties) so it continues, like other Beings, obnoxious to Alterations, which are its Diseases, and to Corruptions, which are its Death; and is, like them, also to be preserv'd from the Power of both by the means of natural Substances, which by their

Necessary to understand the Structure and Uses of the Parts of a Human Body.

Natural Philosophy necessary, in that a Human Body is but a Fragment of the Universe.

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Properties are fitted for this purpose; and such Substances, when apply'd to Human Bodies for these Uses, are term'd Medicines.

What Properties common to what we call Matter, and what peculiar to this or that Being.

2. That the young Student may the better comprehend these things, it will be proper for him heedfully to observe what Properties or Affections appertain to what he intends by the word *Matter* (which is taken to signify what composes sublunary Beings) in all States, Forms or Conditions it is found in; and what only appertain to it, as form'd into this or that particular Being.

His own Experience will soon convince him, that into what Form soever Matter is moulded, or with whatsoever Properties adorn'd, *it is divisible into Parts too minute to be singly perceptible; that it always gravitates, and is always susceptible of Motion.*

Qualities of Bodies how produc'd.

The same Experience will soon likewise inform him, that the peculiar Forms and Qualities, the singular Powers and Operations it is farther enrich'd with, appertain only to it, as its Particles are after such particular manners modify'd and situated.

For it is manifest from the manner of the Growth and Increase of natural Substances, as likewise from their Changes and Dissolutions, that every Part or Parcel of this mighty Universe, whether consider'd only as some Lump or Parcel of Metal, Marcasite, Stone or Earth; or whether consider'd as Water, or some moving Fluid; or whether as some animated Substance endu'd with Life, as the Beasts of the Field, Fowl of the Air, Fish of the Sea, or even as Man himself: Yet all and every one of these, tho consider'd as single, separate or individual Beings,

Beings, and so dignify'd and distinguish'd by proper Appellations, are truly and really Heaps or Aggregates of small and singly imperceptible Particles; which being united and put together after certain and peculiar manners by an Omniscient Power, do from thence compose those immense Multitudes of different Beings which beautify and replenish this wonderful Globe; in that all Beings do naturally moulder or divide, or at least may be reduc'd into such imperceptible Parts. Chap. 2.

Substances but Heaps of small Particles.

And it is likewise as manifest, that the Forms and Qualities, Efficacies, Powers and Operations of all such Beings, do arise from the Figures, Positions and Modifications of the minute Particles; in that such Beings are produc'd out of Materials which bear no resemblance to them; and their Forms, Qualities, Efficacies, Powers and Operations may be blotted out and defac'd, by altering the Texture of such Beings, that is, the Positions and Configurations of the component Particles. This evidently appears in the Subjects of the Animal and Vegetable Kingdoms; the peculiar Forms, Qualities, Efficacies, Powers or Operations of any of which are immediately alter'd or destroy'd, by changing or dissolving their Textures.

3. And tho a Human Body, in the Excellency of its Form and Shape, in the Eminency of its Powers and Actions, far transcends all other Parts of this beautiful Universe: And tho all its Elegancy, whether in Form or Qualities, in Actions or Uses, are dignify'd with proper Appellations, to distinguish them from such as appear in a lower degree

The Affections of Human Bodies, tho dignify'd with peculiar Names, yet not different from other Beings.

Chap. 2. degree in other Parts of the Creation: And likewise altho all its Defects and Blemishes in Shape, and all its Imperfections and Infirmities in its Operations, are honour'd with peculiar Names; and the very Instruments and Means imploy'd for the removing the one, or restoring the other, have likewise their peculiar Denominations; by which means it is probable, Men sometimes are so far misled, as to think the Passions of Men, because gilded over with softer Names, are different from the Rage or Lust of Beasts; or that their Infirmities, because express'd in a large Catalogue of particular Diseases, are form'd and effected in their Bodies by Ways and Methods different from what happens in other Beings; and that the Substances imploy'd for the removing the one, or remedying the other, which are term'd Medicines, are endu'd with some singular Properties that flow not from the bare Nature of Matter. Yet notwithstanding this, Experience sufficiently proves, that our Bodies are but natural Substances, subject to all the Frailties and Infirmities of other Beings, and are form'd, nourish'd, continu'd and dissolv'd from the same Causes common to other Beings. For tho those Opinions do not openly blaze out in the express Words or Writings of Men; yet they seem to lurk, and like Embers, to be conceal'd in their Opinions, and sometime break out like Fire in their Conduct and Practice: For when they have recourse to supernatural Methods, or when they feign an Opinion of unaccountable Powers appertaining to some Substances, by which they produce Effects inconsistent with

with natural Agents; what do they but in- Chap. 2.
sinuate the Presence of some preternatural Power, which they are asham'd or unwilling to acknowledg, altho they repose a Confidence in it?

It is true, the antient Physicians, such as *Galen*, *Avicen*, and some of their Followers, having labour'd with great Industry to accommodate their Art to the Principles of that Philosophy, which in those Ages was principally esteem'd, did by that introduce some Errors, which have since darkned and overspread that Art. Yet notwithstanding those Mischiefs, it is plain, they only adapted the Art of Physick to the Principles of their Philosophy; in that they treated of Human Bodys and Medicines in the same Forms as of other natural Substances: for they explain'd the Diseases of the first by the Alterations of the *first Qualitys*, *Humours*, &c. and the Virtues and Efficacies of the last, by *such Qualitys and peculiar Facultys*, &c. It is true, that Philosophy admitting of *peculiar Facultys*, and likewise of *occult Qualitys*, whose Operations were inexplicable, tho not *unnatural*, did by that administer occasion (to those who did not seriously consider how that Philosophy was interwoven with Physick) to think otherwise; in that such *unaccountable Facultys* were, in a more peculiar manner, applicable to *Human Bodys* and *Medicines*, than to other Substances. And yet notwithstanding the antient Physicians entertain'd Opinions of Efficacys or Powers in some Medicines, inconsistent with the modern Philosophy, and in themselves inconceivable; such their Opinions were but agreeable

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able to that Doctrine which they entertain'd concerning other natural Substances. But since that Philosophy, which was calculated more to amuse and delight, than to instruct or inform, is now universally exploded; and Men rather chuse to inform themselves concerning natural Substances by Experiments and Observations, than by Speculation: it seems wonderful that they should continue to have recourse to such exploded Principles for explaining natural Phenomena; when they may be stor'd with such, as being collected from Experiments and Observations, will happily furnish them for this purpose, if they will diligently attend to them. For what can be more obvious than that Nature produces one thing out of another, when our Senses discover a perpetual Succession of Changes in Forms, in Properties, in Operations and Powers, in Substances, without any real Loss of Quantity, or Annihilation of Matter? which must, unless we commit a Violence on our own Faculties, make us conclude, that there is in Nature one *common Somewhat*, which is the Subject of so many transient and mutable Appearances.

A Human Body, like other Substances, obnoxious to Alterations.

It is a Truth too evident to require a Proof, that Human Bodies, and all those Substances which are us'd as Medicines, are but Fragments of this mighty Globe, being prepar'd out of the same Matter, altho endu'd with very different Forms; and are as incident to Alterations and Dissolutions as other Parts of the Universe: all which Changes are produc'd by some variation arising in the Texture or Configuration of their minute

minute Parts or Particles; which being united and plac'd after a certain manner, do by that make or constitute such Substances. And the Body of Man has no Prerogative to continue its Subsistence beyond other Parts of the Creation: for like them it wants Air and Nourishment for the continuing its Being; like them it is weary'd out with Infirmitys, and griev'd with Frailtys; like them, in a certain number of years, its Strength fails, its Nerves loosen, its Members relax, and its whole Substance moulders into common Earth; and all those Excellencys which appear'd in that elegant Form of those Fragments of Matter organiz'd into a Human Shape, do immediately vanish; and that very Substance, which was before the Glory of the Earth, has nothing left to distinguish it from vile and contemptible Rubbish. Chap. 2.

To be consider'd as a mere natural Substance, and as an animated Being.

But notwithstanding those Fragments of Matter which are modify'd into a Human Body, during that State, are enrich'd with Perfections, distinguishing them from all other Beings; yet there remain in them some Affections common to other animated Bodies, and some promiscuously to be found in all natural Substances. Wherefore to form a just Idea of the Nature of a Human Body, we must distinguish between such Affections, and accordingly consider it in a threefold Capacity.

(1.) As a Human Body; and in forming that Idea, we must take in those Properties only which strictly appertain to it as such a Being, *viz.* Shape, Reason, *&c.*

(2.) As

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(2.) As an animated Being or Substance endu'd with Life; and as such to consider it as having Sense, Self-motion, *&c.*

(3.) As a mere natural Substance extended and figur'd; and as such to be *divisible into Parts, to gravitate, and either to move*, or to be capable of Motion.

Two of these properly concern the young Student.

The first of these do not so immediately relate to the Care or Concern of the young Physician, as the two last. It is therefore to the understanding of these that he should principally apply his Thoughts; for tho it is strictly the second which is to be the immediate Subject of his future Care, yet whatsoever is contain'd in that, being only what is superadded to the common Affections of Matter, or Substance so taken (for an animated Substance is made out, and is again resolv'd into such Matter, as has only such common Affections) it is manifest, the peculiar Properties of such animated Substances are not to be well distinguish'd or understood, unless the common Affections of Matter be first known. However, these last being prior in Nature, deservedly merit our earliest Knowledg.

Earth and Water the common Parents of sublunary Beings.

4. There are to be found in this our World but two Substances, which appear to the View of our Senses to be the common Parents of all sublunary Things; and these two are what we usually signify by the common Terms of *Earth* and *Water*. And notwithstanding these two appear so marvellous different in Form and Qualities; yet they agree in those common Affections, of being divisible, of being capable of Motion, either by Impulse or Gravitation: for out of

(5) these

these two Elements, Earth and Water, are produc'd Plants and Vegetables; and all the Inhabitants of the Woods, Fields and Waters, are either mediately or immediately supported or nouriſh'd from ſome of theſe. For notwithſtanding ſome Beaſts of Prey do not feaſt or feed either upon the Graſs of the Field, the Fruits of the Trees, or Plants of the Earth; yet they prey upon ſuch Creatures as do: and all of them are promiſcuouſly reſolv'd into the ſame Elements. Chap. 2.

The Antients began with Natural Philoſophy.

From theſe Conſiderations it will be neceſſary, that he who intends to apply himſelf to the Art of Phyſick, ſhould firſt endeavour the Diſcovery of ſuch Affections as are common to that Subſtance, out of which human, and other animated Bodies, with all natural Beings, are form'd; and then gradually proceed to inform himſelf of ſuch other Affections as may be obſerv'd in a Human Body, as animated or endu'd with Life. And this ſeems to have been the Method by which Novices were heretofore initiated into that Art, as appears by the Inſtitutes publiſh'd by divers learned Men, particularly *Galen*, *Rhazes*, *Sennertus*, *Fuchſius*, &c. as likewiſe in that they have blended and interwoven the Philoſophy eſteem'd in thoſe Ages with that excellent Art, and have form'd that Proverbial Saying, *Ubi deſinit Phyſicus, ibi incipit Medicus.*

What Parts of Natural Philoſophy to be underſtood neceſſary.

5. But as he who deſigns to learn Navigation, does not always perplex himſelf in the purſuit of Knowledg in all the ſublime parts of Mathematicks, which perhaps little relate to his Skill in that Employment; ſo he, who turns his Study to Phyſick, needs not waſt

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waſt his Hours in the ſearch after ſuch natural Niceties, as do not immediately relate to the furthering his Knowledg in that Art. It may be ſufficient, in his forming juſt Ideas of all the ſeveral Infirmities which encompaſs Human Nature, thorowly to enquire into ſuch Affections of Matter as may be obſerv'd to appertain to it, or to proceed from it, in whatſoever Form or Shape, which will be found always diviſible into inſenſible Parts; that ſuch Parts do either move, or are capable of being mov'd; and that they gravitate, or tend downwards.

Forms and Qualitys, how produc'd.

That as all particular Subſtances are but Heaps of ſuch ſmall Particles; ſo their Forms, Qualitys or Appearances proceed from the various Poſitions and Configurations of thoſe Particles, which being after different and particular manners united, do by that means give birth to various Powers; which operating upon, and affecting our Senſes, are denominated Qualitys: And that tho natural Subſtances are different, and appear of divers kinds, and have differing Natures from their *Forms*, *Qualitys*, *Powers or Operations*; yet really, and in their own Natures, they are diverſify'd from each other by a Difference only in their Texture, and the Configuration of their minute and conſtituent Parts: And as all their Forms and Qualitys are produc'd by that, ſo are all their Actions and Operations by ſome Motion of ſuch Parts.

Subſtances differ from each other.

Two ways of perceiving Subſtances, by their Qualitys, or Operations.

And that there are but two ways by which natural Subſtances are perceiv'd, known or diſtinguiſh'd; either by their Qualitys, ſuch as Colour, Smell, Taſt, *&c.* or what may

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be call'd tangible Qualitys, which appear to inhere, reside or appertain to the Substance: or else by their Efficacys, Actions or Operations, which are felt or perceiv'd; and yet the Substances from whence they proceed, either not perceiv'd, or the manner of their Procession not discover'd. In the first, our Senses are immediately affected by the appearing Qualitys of the Object: In the other, our Senses are someways affected, but yet the Object it self, or the manner of its operating, is not perceiv'd.

Every common Object furnishes Materials for knowledg of these Truths.

6. But that these things thus briefly hinted at, may be of future use, he must have them deeply imprinted in his Mind; which will not easily be perform'd, unless he can get a clear Idea of them, and be fully convinc'd of their Truth. And this is not to be attain'd, but either by his own Experience and Observation, or by the Reasons or Authoritys of others.

Instances of the Divisibility of Matter in several Substances.

His own Observation will readily furnish him with plenty of Instances: for every common Object which falls under the cognizance of his Facultys, will readily give Testimony of its own Divisibility; there being no part of Matter which our Eye can view, or Hands can handle, but affords us Proofs that it may be divided into imperceptible Parts. The hardest Diamond may be ground into Dust, and the Parts of Gold may be so divided as to gild a Body a thousandfold larger than its own Bulk. Neither do we find any Parts of Matter under so absolute a Rest as not to be mov'd; the most close and compacted Metals may be so forcibly mov'd by the Violence of Fire, as to appear under

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the Form of Fluids; and no Substance so cold, but its Parts may be mov'd by Heat: Neither is there any Substance of so rare or light a Nature, but will, all Obstacles remov'd, naturally descend.

Examples of the transitory Nature of Qualitys.

And his own Observation will likewise readily demonstrate, That the Forms and Qualitys of Bodys do depend upon the internal Texture, and the various Configurations of their minute Particles; in that all such Qualitys may be alter'd, chang'd or destroy'd, by breaking the Texture, and altering the Configuration of such small Particles as constitute them: this Truth almost every common Object, in some one or more Qualitys, confirms. The glorious Colours of Flowers are lost, by bruising the Leaves wherein they reside; the fragrant Smells of Plants may be destroy'd by a Violence upon the Parts; and the delicious Tasts of Fruits may be alter'd and spoil'd by the same Methods; the Juice of all Fruits gradually change their Qualitys, as most Liquors do their Tasts by time: Sonorous Bodys, as Bells and Musical Instruments, lose their Harmony by a Crack, and Metals change their Surfaces by being hammer'd; the Facultys and Operations of Bodys are blotted out by Fire, when their Texture is chang'd; the purgative Qualitys of Rhubarb or Jalap may be destroy'd when their Textures are broke by fiery Tortures; and the Properties of *Mars* may be chang'd by the same Methods: Earth and Water, those sluggish and passive Elements, by a little natural Chymistry, are turn'd into the more active Principles of *Salt, Sulphur and Mercury*;

and the most generous Wines which rejoice the *Hearts of Gods and Men*, are but those Elements metamorphoz'd. Chap. 2.

7. But by reason young Men are not easily prevail'd on to make such useful Observations, in order to draw Conclusions for future Knowledg from such common Objects, unless their Heads are first impregnated with some Principles of Natural Philosophy, to move them to such an Enquiry (for without that help such common Occurrences, in natural things, are rarely regarded for these Purposes) therefore that they may the better be dispos'd to perform this, it will be convenient that they be first instructed in such Principles of Natural Philosophy as may invite them to those Studys: But these ought to be such as Nature really offers, *viz.* such as are discover'd and learnt from Experiments and Observations, and not such only as the luxuriant Fancys of Men have contriv'd and dress'd up; that so their Minds being first furnish'd with clear and certain Principles, they may be invited to draw Conclusions for the better explaining such Phenomena, as ordinary Objects continually offer. For tho all that little Knowledg Men are capable of attaining, concerning the Nature of Substances, is only *a posteriori*; that is, to be obtain'd by the Testimony of Sense, and Evidence of Observation: yet Causes being, by the means of their Effects, thus discover'd, Men are afterwards, by such Helps, capacitated to argue and conclude *a priori*; that is, from Causes to their Effects. Thus for instance, altho we could never *a priori* know, whether that yellow,

Men not easily persuaded to make such Observations, unless their Minds are excited by some Systems of Philosophy.

Such Principles to be regarded as taken from Observations.

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solid and ponderous Substance we call Gold, would melt and become fluid by the force of Fire; yet having been taught by Experience that it will, we can safely conclude of several Effects, which will necessarily arise from such a State, altho we had made no Experiment of them, because they are but natural Effects of that State. And thus in natural Philosophy, having discover'd some *common Affections* of what we call *Matter*, we may from them reason of such Properties as will naturally flow from them, notwithstanding our Senses have not as yet discover'd such in those Subjects we reason about.

That therefore the Student in Physick may not be unfurnish'd in the knowledg of such Principles as may be of use to him, in comprehending the Affections and Properties which remain in the Substance that makes the Body of Man, and are common to it with all other natural Beings, *viz.* such as are *the Divisibility, the Motion or Rest of its Parts, their Gravitation*; as likewise how the *Forms, Qualitys, Propertys, Affections and Operations* proceed and flow from the various Configurations of the innate Corpuscles, constituting the different Parts or Members; and how the Change of such Forms or Qualitys only arise from a variation of their internal Constitution; that is, of the Sites and Positions of the component Particles: It will be proper for him to read some one or more Authors, who have briefly and intelligibly treated of these things. The Books, amongst a multitude who have excellently treated upon these Subjects, I shall recommend, are

Boyle's

Boyle's *Origin of Forms and Qualitys.*
Gassend. Syntagma Philosoph. Epicur.

The careful Reading of these two short Treatises will give such an Idea of Natural Philosophy, as may suffice for that Art in which he purposes to exercise himself. But if ravish'd with the delicious Tast of the Fruit gather'd from this Tree, he resolves to proceed farther in the pleasing pursuit of Knowledg in these Studys, he may find these Subjects delightfully and learnedly handled by the following Authors: Some of which draw him out an intire Scheme of *Physics*, others beautifully image out some particular Parts of it, and others carefully furnish him with Experiments to illustrate general Truths, or to afford him Materials whereby to do it himself.

Lucretius de Rerum Natura.
Gassendi Animadversiones in 10 *lib. Diogenis Laert.*
Keil Prælectiones Physicæ.
Rohaultii Physicæ.
Le Clerke Philosophia Naturalis.
Oldenburgii Acta Philosophica Regia.
Philosophical Transactions abridg'd.
Boyle's *Physico-Mechanical Experiments.*
——*Usefulness of Experimental Philosophy.*
——*History of Colours.*
——*History of Cold, and most other his Philosophical Tracts.*
Histoire de l'Academie Royale des Sciences.
Miscellanea curiosa, sive Ephæmerid. Medico-Physicor. German.
Acta Medica & Philosophica Hafniens.
Acta Academ. Eruditor. Florent.

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And if a more generous Thirst after Knowledg fires him with the Desire of a Demonstration in Natural Things, let him with Sedulity and Care fit himself with such a Knowledg of the Mathematicks, as may enable him to read and understand that most elaborate Treatise of Sir *Isaac Newton*,

Princip. Philosoph. Natural. Math.

But if the young Student is not pleas'd nor satisfy'd with so plain a Knowledg, which being gather'd from the nature of Things, is most consonant to Truth; but seem rather desirous to appear in a more pompous Equipage (for Truth is usually simple and plain, and so not gaz'd at) that so the Lustre of his Character may invite the Eyes of Men to view and admire Learning, in that he is able to wrap up indigested Notions in exotic and mighty sounding Words, and, like a repeating Clock, to strike over what he doth not understand, to instruct others in the things he knows not himself, to repeat the several Hypotheses which have been merrily invented and wittily contriv'd to explain all the Secrets of Nature: He may consult the following Authors; which if he uses as pleasing Images, painted out in the soft Numbers of Poetry, for his Diversion but not his Information, to amuse others but not to deceive himself, he may by such Figments render his Character the more conspicuous; in that it is for the most part the Trappings, and false, but glittering Appearance of what we call Learning, which raises an Admiration amongst Men.

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But in regard the Leisure or the Circumstances of several Gentlemen, who may be desirous to have a Tast of this part of Learning, may not perhaps admit of the Method of informing themselves in the Opinions of the antient Philosophers (which are thought the more valuable, as they are the more venerable) from reading the Original Authors in which they are recorded; therefore that they may not remain intirely ignorant in these Opinions from such Misfortunes, I shall recommend to their reading two or three modern Writers, who seem to have faithfully collected them, *viz.*

Cudworth *in his Intellectual System; or the Abridgment of it by Mr.* Tho. Wise.
Stanley's *Lives of the Philosophers.*
Vossius de Philosophia, & Philosophorum Sectis.

And if they are so pleas'd with the Tast of the Waters taken from these Streams, that they become more desirous to have larger Draughts from the Fountain-head, they may, for their Pleasure or Satisfaction, read

Diogenes Laertius de vit. Philosophorum.
Plutarch de placitis Philosophorum.
Cicero de Natura Deorum, de Divinat. de Finibus, with his other Philosophical Works.

As likewise, *Jamblicus de vit. Pythagor. Sextus Empiricus, Porphyrius, Clemens Alexandrinus, Lactantius, Gellius, Stephanus, Suidas, Stobeius,* &c.

And because most of the antient Physicians have founded their Hypotheses in Physick upon the Principles of the Peripatetic Doctrine; and several of their Writings, and some of their Opinions continue in Esteem:

Chap. 2. that young Students therefore may not be ignorant in that Philosophy, upon whose Principles Physick was antiently founded, they may read

Aristotle's *Physics, and his great Expositor, Alexander Aphrodiscensis in Arist. Phys.*

on whom most of the numerous succeeding Commentators upon that Author have grounded their Expositions.

And in that the Modes and Forms of Learning, like most other sublunary things, have undergone several Changes; and, in truth, have been, as it were, under a constant Flux (for example, the once celebrated *Aristotle*, whose Writings were formerly appeal'd to, and whose *Dixit* silenc'd Gainsayers, at present is exploded and despis'd, and several new Hypotheses in Philosophy have had likewise their Turns) wherefore that young Students may not be unacquainted with such Hypotheses, as have at present, or have once had their Followers and Admirers, I shall adjoin the most remarkable who have either broach'd new, or dress'd up old Opinions, that so they may have recourse to them, if they are any ways desirous of being acquainted with such Doctrines. Amongst these, as deservedly to be first nam'd, are the Renown'd *Renati des Cartes Principia Philosophiæ Natural.* and all the Tribe of his Followers, *viz.*

Henrici Regii Fundamenta Physica.
Ant. le Grand Philosophiæ Nat. Institut. sec. Princip. Cart.
Stoockii admirab. Method. Philosoph. Cart.
Velthusius de initiis primæ Philos. juxta Cart. Fundament.
Hen. Moor Ep. ad V. C. &c. Besides

Besides this famous Sect of *Cartesians*, there are a multitude of others, tho not of equal Fame, such as Chap. 2.

Th. Hobs Elementa Philosoph.
Ber. Telesius de Rerum Nat. juxta Prop. Princ.
Galtruchii Physica universa.
Capichius de Rerum Principiis.
Portius de Rerum natural. Principiis.
Kippingii Philosophia Naturalis.
Menhemii Philosophia Naturalis.
Hill Philosophia Epicurea Democrit.
Kiperi Institutiones Physicæ.
Campanell universa Philosophia.
Colbert Philosoph. Burgund.
Holwardæ Philosophia Naturalis.
Duhamel Philosophia vet. & nova.
Gravii Specimen Philosophiæ veteris.
Fer. Ponzettæ Philosophia Naturalis.
Bengueri Idæa totius Philosophiæ.
Neandri Physica.
Kronlaud Philosophia vetus restituta.
J. Paul Pernumiæ Philosophia Naturalis.
Titelmanni Compendium Philosophiæ Natural.
Gratorela de Substantiis Physicis.
Schmidt. Idæa Philosophorum variorum.
Mazotta de triplici Philosophia.
Gilbert Physiologia nova de Mundo.
Fran. Baile Systema General. Philosoph.
Burnet's Theoria Terræ.
Hen. Nollii Theoria Philosophiæ Harmet.
Jo. Fran. Buddæi Element. Philos. Theoret.

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CHAP. III.

The Propertys appertaining to a Human Body to be obserd. Two different States of a Human Body, viz. Sickness and Health. Health the Perfection of our Natures, Sickness the Infirmity. 2. Health and Sickness in general regard the whole Body: In particular the several Parts of it. Life and Death denote the Continuance and Cessation of such Functions. Errors of our Ancestors in determining the prefix'd Nature of Diseases. 3. Instances to illustrate what has been obserd concerning Diseases. All Parts of a Human Body assist and co-operate in the performing the Actions of the Whole. Necessary to know the Structure of the Parts, and their Uses. 4. Parts of a Human Body consider'd, either as Organical or Inorganical. Organical Parts consider'd either as Moving or Moved. Parts Moving of three sorts. Parts Mov'd distributed into four kinds. 5. Muscles out of what Vessels form'd. Use of the Muscles. Three Things necessary for Muscular Motion. 6. What Parts endow'd with involuntary Motion. How that Motion is effected. 7. Parts Mov'd enumerated under certain Heads.

A Human Body to be consider'd.

1. THE young Student having stor'd himself with a competent Knowledg of such Propertys as are found in Matter in all Capacitys, as well when it is moulded and

and fashion'd into a Human Body, as when it remains under the Form of any other Substance: the next Step he is to take, is to consider Matter as now constituting such a Body, *viz.* as it is fashion'd into such a Shape, and enrich'd with such *Powers*, *Functions* and *Actions* as are peculiar to that Body, so long as Matter remains under that Form. But in these Enquirys it will become him to be very circumspect, that he is not misled by Words or by Prejudices, which are too often grafted upon vulgar and receiv'd Opinions: but that he carefully observes the Subject it self, and grounds his Judgment upon his own or others Observations; which if he does, he will soon find that a Human Body frequently falls under two very opposite Conditions, *viz.* *Health* and *Sickness*. In the first of which the several Parts and Members do orderly and regularly perform their proper Offices and Operations, and all then co-operate for the making and continuing those Functions and Actions which appertain to the Nature of such a Body: When therefore the several Offices, Functions and Actions of the different Organs of the Body are rightly and duly executed, the Body is said *to be Well, or in Health*. In the other State, the Members, Organs or Parts are become unable to perform their proper Offices or Uses; by which means the natural Oeconomy of the Body is disorder'd, and the Powers, Actions or Excellencys belonging to it as such a Body, are injur'd or destroy'd; and then that *Body is said to be Sick: Sickness and Health* being only Terms us'd to express the differing States of a living Human

Two different States of a Human Body, viz. Health and Sickness.

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man Body. For those Words relate either to the Excellency or Perfection, which is call'd Health, or to the Defects or Infirmitys of the natural Functions of the Body, which are term'd Sickness: for by Health and Sickness we do not seem to denote the Defect or Loss of any Part, but a Perversion of their Uses; as appears evident, in that a Body imperfect in Form, and defective in Parts, may be in *Sickness* or *Health*. For tho a Perversion or Defect of the Functions or Actions of a Human Body may arise from some Vice or Deficiency of the Parts; yet it is only the Fault or Failure of the Functions, and not the Defect or Infirmity of the Organ, which is signify'd by that Expression, *viz.* *Sickness* or Disease.

Particular Diseases from the Parts.

2. And as the differing and contrary States of a Human Body, so long as it continues capable of Functions and Actions, that is, so long as it is said to have Life, are denoted by these two general Words, *Health* and *Sickness*; so are the different Conditions of the several Uses or Operations of particular Organs or Parts, express'd by particular Terms, and accordingly consider'd as the *particular Healths or Diseases* of such Parts. For notwithstanding the Oeconomy of the whole Body is disorder'd by the Vice or Failure in the Operations of a Part; yet if the Infirmity be discover'd in a *Part*, that *Part* is then said to be diseas'd. And as *Health* or *Sickness* thus refer only to the Perfections or Imperfections in the Oeconomy of Human Nature; so dos the word *Birth* refer to the beginning, and *Life* to the continuance

continuance of the Existency of such Functions, as the word *Death* doth to the Cessation of them. Chap. 3.

And these Considerations, at the first entrance into these Studys, give us a tast of the Errors of our Ancestors, in digesting the disorder'd State of the natural Functions and Actions of a Human Body into a certain determinate Classes or Species, and prefixing to each its Bounds and Nature. By which Method of treating them, They seem to have intimated, as if they imagin'd somewhat real and absolute was to be added or superinduc'd, in order to form such certain and determinate Diseases (which were thus consider'd as having specifick Natures) when, in truth, Sickness and Health being only Terms us'd to express the differing States of a Human Body, can only relate to the good or bad Nature or Disposition of the constituent Parts of that Body, and not to any real, and I know not what specifick, Nature added to them. And yet notwithstanding this, the Doctrine of the Schools has so marvelously prevail'd, that such Notions have been introduc'd as are intirely agreeable to the Peripatetic Philosophy; by which Diseases have been treated as having common Natures. And so, notwithstanding *Galen*, and many of his Followers, do not seem to intend any thing more by Diseases, than what has been already observ'd; yet the Mischiefs arising from that Doctrine have multiply'd, altho contrary to his Notion, his Opinions having insensibly yielded to the School-Forms.

An Error in forming Diseases into Classes.

Galen *did not take Diseases as many of his Followers have done.*

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But because it may be somewhat difficult for the young Student (who may be fairly suppos'd, when he reads this *Directory*, to be unacquainted with the different States of a Human Body) readily to comprehend what has been here but cursorily and lightly touch'd at, concerning *Health and Sickness*, it may not therefore be improper to illustrate what has been said by some particular Instances. Thus when all the variety of Parts, which being united compose a Human Body, *viz.* when *the Eye, the Ear, the Hands, Feet, Head, Trunk, Heart, Lungs, Blood, Spirits*, and in short all other Parts outward and inward, do regularly perform the several Offices they are prepar'd for, *viz.* when the Eye sees, the Ear hears, the Hands feel, the Feet move; when the Stomach and Bowels perform their Dutys, the Pulse beats, the Blood circulates, the secretory Vessels filtrate, the Spirits have their Vigour, and every Part its true Motion, Use and Strength; when no Disquietudes torment the Mind, nor no Pains or Infirmitys the Body, the Man then is in Health; because all the constituent Parts are then in such a State, as they are by Nature appointed to. But when any of these decline in the performance of their Offices, the Body becomes diseas'd, that is, infirm; because something is then wanting that is necessary to its natural and perfect State: for when the Eye is affected, the Sight becomes deprav'd; when the Ear, the Hands, Feet, Head, Stomach, Bowels, Heart, Lungs, Liver, *&c.* fail in their proper Offices; or when the Blood declines in its Uses, or the Spirits

Disease or Sickness illustrated by Examples.

rits in their Strength, Order and Vigour, then the *Body is disorder'd or diseas'd*; that is, *it is then Sick*. For every part of a Human Body, according to its Office, co-operating and assisting in the performance of the Actions and Powers which appertain to the nature of the whole; it is manifest the Functions of the Body must be perverted by the Faults or Imperfections of the Parts, as the regular Motions of a Clock are by the Faults of the Wheel-springs, *&c.* Wherefore that the Student in Physick may the better understand Diseases, it will be proper for him, in the next place, to inform himself in the Structure of the *Parts* of a Human Body, and the various Habitudes, Relations and Positions they bear to each other: by which Survey, he may be the better able to discover their Offices and Uses, and what share each bears in the performance of such Actions and Operations as may be observ'd in the whole.

Necessary to inquire into the Uses and Relations of the several Parts of the Body.

3. A Human Body, tho prepar'd out of common Materials, yet all its Parts are so curiously wrought, so elegantly contriv'd, and so wonderfully united, as to compose a Being, beautiful in Form, and surprizing in Actions, Motions and Uses. It would be a labour too tedious and perplexing for the Design of this Discourse, to describe the Figure, Texture, Situation, Connexion, variety of Motions, Operations and Uses, the several Habitudes and Relations which the several Parts have to each other, and the Diversity of Offices they sustain. It is sufficient for my purpose, that they are briefly consider'd under two Heads, *viz.* either

The Parts of a Human Body consider'd as Containing or Contain'd.

as

Chap. 3. as they are *Organical* or *Inorganical*, *Containing* or *Contain'd*, or to speak in more absolute Terms, *Consistent* or *Fluid*. However if the young Student be desirous to have a more enlarg'd Idea of these things from other Hands, he may read

Barthol. Bausnerus de consensu Human. Corp. Partium.

Albert. Kyperi Anthropologia Corporis Humani Contentor.

Galen de Usu Partium, and indeed most Anatomical Writers.

Organical Parts of two sorts, Moving or Mov'd.

It is not my Intention graphically to describe the Structure of every particular Organ of a Human Body, nor fully to paint out their several Uses, but to refer the young Student to such Authors as have amply treated of them. I shall only briefly hint at such things, as may lead him to form such Ideas of Diseases as may be useful to him in Practice. And for this purpose I shall only observe, that the *Organical or Consistent Parts* may, in respect of their Uses, be reduc'd into two sorts, *viz.* *Moving* and *Mov'd*. By *Moving* I understand such *Parts* as appear to be the immediate Instruments of Motion, in the several Members of a Human Body: By *Organs mov'd*, I intend only such solid *Parts* as are, as it were, Pillars or Supporters to the several Members; and tho mov'd by the weak and tender Parts, yet really add a Strength and Firmitude to the whole: and being carry'd in Motion by the others, are only passive in it, tho the Strength of the Member consists in them.

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Parts moving, of three sorts;

The first Sort, or the Parts moving, may be consider'd as such which have

Either { Voluntary, / Involuntary, or / Partaking of both } Motions.

The Organs prepar'd for voluntary Motion, are the several Muscles which compose the fleshy Parts of the whole Body, *viz.* Arms, Thighs, Shoulders, *&c.* The Description and Structure of the Muscles the young Student will find excellently explain'd by

Nic. Steno in his *Myologiæ Specim. & de Muscul. & Glandul. Specim. Observ.*

Fab. ab Aquapend. de Muscul. Artificio. As likewise by the Anatomical Writers hereafter nam'd.

The Organs for involuntary Motion are the Heart, and all the membraneous Parts which move, *viz.* Stomach, Intestines, *dura Mater*, &c. The Structure of the Heart is admirably describ'd by

Rich. Lower de Corde.

G. Rolfincius, Dissertat. de Corde.

Nic. Steno Myologiæ Specim. and in many others, *&c.*

The Description and Uses of the *Dura Mater*, by *Pacchioni de dura Matre.*

Willis Cerebri Anatomia.

Landi Anatomia Corporis human. &c.

Those of the *Ventricle*, *Intestines*, &c. by *Willis* in his *Pharmaceut. Ration. par.* 1.

Glisson de Ventriculo & Intestinis.

The Organs which are of a mix'd nature, as partaking of both Motions, are such only

Chap. 3. as immediately contribute to Respiration. But those Organs employ'd in Breathing, are of divers sorts, *viz.* Muscular and Membraneous, *&c.* The muscular Parts are not in Structure different from other Muscles. The Lungs which are mov'd in it are admirably describ'd by

Malpighius de Pulmonibus.
Willis Pharmaceut. Rational. par. secunda.

The other Sort of Organs, or the Parts mov'd, may likewise be branch'd, in respect of their Uses, into several kinds.

First, Into such as are only prepar'd to be mov'd, in that the Make, the Strength and Firmitude of the Member depends upon them:

Of which kind are the several Bones of the
- Shoulders,
- Arms,
- Hands,
- Fingers,
- Thighs,
- Legs,
- Feet,
- Ribs, *&c.*

For the Nature, Structure and Use of the several Bones, consult

Galenus de Ossibus.
Dan. Retzer Disquisitio de Ossibus.
Schneideri Disputat. Osteologica.
Jo. Matthæi Viringi Tabulæ Anatomicæ Ossium Humani Corporis.
Bartholinus, &c. *of Anatomical Writers.*

Secondly, Into such as seem rather prepar'd for the Use, Conveniency, Preservation or Defence of some Juice or Fluid contain'd in them, than for any Help they yield

to

to the Motion of the Part wherein they are plac'd: Chap. 3.

Of this sort may be reckon'd
- The Skull,
- Vertebres,
- Arterys,
- Veins,
- Lympheducts,
- Bileducts, *&c.*
- Ureters,
- Urethra,
- Ducts of other secretory Vessels.

The Description and Uses of the Lympheducts may be particularly seen in *Olaus Rudbeck*, *Ruischius*, *Bartholinus*, *Bilsius*: those of the other Parts in most Anatomical Writers.

Thirdly, Into such as by reason of the Elegancy of their Texture, Tenderness in their Temper, and Softness of their Natures, can add neither Strength nor Firmitude to the Member, but are only, by virtue of their Situation, carry'd in Motion with the contiguous Parts:

Of which kind may be numbred the
- Conglobate and Conglomerate Glands,
- Brain,
- Spinal Marrow,
- Liver,
- Milt,
- Pancreas,
- Kidneys, *&c.*

The Glands are excellently describ'd by
Wharton Adenographia.
Steno de Ore, Oculis, Naribus Observ. Anatom.
Schneideri Dissertat. Anatomica de Osse Cribriform. &c.

Chap. 3. The Brain by *Willis Cerebr. Anatom.*
Steno Dissert. de Cerebr. Anatomc.
Glasorus de Cerebro.
Malpighius de Cerebro.
The Spinal Marrow by *Willis Neurologia, Bartholine*, &c.
The Liver by *Glisson de Hepate.*
Malpighius de Hepate.
The Milt by *Tillingius de Liene.*
Malpighius de Liene.
The Pancreas by *Le Graaf de Pancreate.*
Con. Peyerus Exercitat. Anatom. & Med.
The Kidneys by *Malpihgius de Renibus.*
Bellinus Exercitat. Anatomia de Usu & Natura Renum.

Fourthly, Into such as being mov'd by other Organs, add no immediate Strength to the Member in which they are situated, but have a proper Use to themselves:

Of these are the { Teeth, Nails, Hair.

Muscles their Form and Use. 5. The Muscles, as they are the direct and proper Instruments of voluntary Motion, may be consider'd,

1*st.* As to their Form and Texture.

2*ly.* As to their Use.

(1.) As to their general Structure: They are compos'd of two different kinds of Fibres, *viz.* Carnous and Tendinous; and these are so elegantly interwoven and knit together as to form their Substance. Besides these, they are endow'd with two other sorts of Vessels common to them with other Parts, *viz.* Nerves and Blood-Vessels. The various Figures and Textures of particular

cular Muscles are accommodated to the Parts in which they are plac'd, and adapted for the Uses to which they are destin'd. Chap. 3.

(2.) As to the general Use of the Muscles, they are the Instruments prepar'd by Nature to be imploy'd at the Will of the Man, for the moving the different Members of the Body.

Voluntary, or a Self-active Power of Motion, proper only to animated Beings.

And since the forming a just Idea of this voluntary Motion exercis'd by the Muscles, may be of wonderful Use to the young Student, in comprehending the Nature of such Diseases, which consist, or at least appear, in irregular and preternatural Motion, such as Convulsions, *&c.* Therefore I shall briefly remark, that as this active Power of *Voluntary* or *Self-Motion* is observ'd in such Parts of Matter as constitute a *Human Body*; so it is most manifest, that it is some Excellency added or superinduc'd to Matter, in that it is only to be observ'd in a Human, or at least in Animated Bodys; and the Muscles are the proper Organs prepar'd and imploy'd as the Instruments for performing this Motion.

But notwithstanding a human, or at least an animated Body, has this Prerogative of *Voluntary* or *Self-Motion* above the other Parts of this Globe; yet for the exercising or transacting this Motion, it is notoriously evident, these three Conditions are intirely necessary.

What requir'd for Muscular Motion.

(1.) That the Muscle it self be in all things accommodated to move.

(2.) That there be an Influx of Spirits by the Nerve into the Muscle, that so it may be actuated or set a going.

Chap. 3. (3.) That there be a continual Supply of Blood in Circulation, to be to the Muscle as a Weight is to a Clock, to forward and assist its Goings.

For by a Deficiency in any of these three things, that Motion soon becomes imperfect, or is intirely lost.

For if the Influx of Spirits be but intercepted, Motion will not begin; if the Circulation of the Blood be stopt, it will not proceed; and if the Form or Structure of the Muscle be injur'd, it will do neither.

The Truth of the First is evident by wounding the Nerve, the Second by binding or cutting the Artery, and the Third by bruising or destroying the Muscular Fibres.

And as thus this regular and voluntary muscular Motion, which appertains to, and may be observ'd in a Human Body, requires these Conditions, or such Instruments for its Performance; so its Irregularitys or Imperfections, which are signify'd by Convulsions, Palsys, *&c.* must proceed from some Vices or Defects in these.

But if the young Student desires to be farther inform'd of the Opinion of others concerning this Animal Motion, he may read

Galen de Motu Musculorum.
Croon de Motu Musculorum.
Anommus de Ration. Motus Musculorum.
Willis de Motu Musculorum.
Deusingii de Motu Animal. sive Musculorum Exercitatio.
Petitus de Motu Animal. Spontaneo.
Bellinus de Motu Cordis, &c.
Borellus de Motu Animal. and in truth most Anatomical Writers.

6. The

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6. The Subjects or Organs of involuntary Motion, are for the most part membraneous; there being but one part purely and intirely Muscular imploy'd in that Motion, *viz.* *the Heart*: and that being in all things, the Figure only excepted, like the other Muscles, may, as to its general Structure, and the Nature and Number of its Vessels, fall under the short Description of such.

Involuntary Motion perform'd by the membraneous Parts.

As to the general Make of the membraneous Organs, imploy'd as the Instruments of involuntary Motion, such have for the most part but Fibres of one kind, which in appearance carry some sort of resemblance to those we term Tendinous in the Muscles: But altho these Fibres are only of one kind, yet having different Sites and Positions, they are thereby fitted to effect the Motions proper to such Parts. These membraneous Organs are likewise endu'd with Nerves and Blood-Vessels, as necessary Instruments to make and continue their Motions. The Description of these may be learnt from the above-nam'd Authors, and many others.

Membraneous Organs how form'd.

This involuntary Motion, tho perform'd by proper and peculiar Organs, yet seems to agree in every thing (as well in its beginning as continuance) with that Motion, which may be observ'd in natural and inanimated Substances; for it is perfectly perform'd by a sort of Mechanism in the Parts, being begun and continu'd by an Impulse, which it evidently receives from certain physical Beings; as it's reasonable to infer, in that it is imparted by the Parents to the Embrio, cherish'd and continu'd in the Womb by the Mother: and when the *Fœtus* is once excluded thence,

Involuntary Motion begun and continu'd by an Impulse from without.

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and so made a *separate and independent Being*, the Air immediately rushes into the empty Lungs of the Infant, to contain that Motion wherein Life consists; by whose Entrance the Course of the Blood is chang'd, and a new Motion begun in the Heart: as the young Student may be inform'd by a multitude of Anatomists, and particularly by

Lower de Corde.
Needham Disquis. de Fœtu Formato, &c.

It is true, the Organs imploy'd in this Motion have this Prerogative above all inanimated Substances, that their Motion may be intended by Irritation, which is a Motion, in which the Effect far exceeds the Power of the Cause; whereas in Motions made by Impulse, they are but equal to the Cause.

Motion of a mix'd nature proper to the Organs of Respiration.

The Organs which appear of a mix'd nature, as partaking both of voluntary and involuntary Motion, are only those appertaining to Respiration. For as both membraneous and muscular Organs jointly contribute to this Work, the Motions of some of which are voluntary, and others involuntary, as has been already observ'd; so this Motion, thus effected by both, partakes of the Nature of both: which appears, in that our manner of Breathing may be alter'd at our Pleasure, tho it cannot be suppress'd at our Will. But if the young Student is desirous to be inform'd of the Physical Reason of the Air's rushing into the Lungs, in order to continue that Motion which is so intirely necessary for Life, he may read

Boyle's

Boyle's Physico-Mechanical Experiments.
Swammerdam de Respiratione.
Tractat. Physico Anatom. Medicus.
Neukrantz Dissertat. Philosoph. de Respirat.
Gassendus de Respiratione.

7. The Parts mov'd, altho of differing Substances, and prepar'd for very different Uses, may, in regard of some Similitude in their Form and Structure, be reduc'd to three kinds. *Parts mov'd of three sorts.*

(1.) Such as are of a bony or osseous Substance, which have some things proper to them, and others common with other Parts: The things proper are the Marrow or Juice contain'd in their Cavitys, and their proper Substance; the things common are Nerves and Blood-Vessels. But the first of these permeate no farther than the Membrane which wraps them up; and for this reason there is no sense in the Substance of the Bone, because there is no nervous Fibre.

(2.) Such as are prepar'd for secretory Vessels, as the conglobate and conglomerate Glands, Liver, Milt, *&c.* all of which are either one intire Gland, or a Heap or Multitude of minute ones, variously knit and interwoven together by Fibres or Membranes; and from that Variety in Composition and Texture, is acquir'd a difference in Structure, Colour, *&c.*

(3.) Such as are only fistulous, and so are prepar'd only for Channels, to carry or convey some Fluid, as the Arterys, Veins, Ureters, *&c.*

But the Description of all the Organical Parts, as well those Moving as those Mov'd, being

Chap. 3.

Organical Parts of a Human Body describ'd.

being the proper Design of Anatomy, I shall therefore, according to my propos'd Method, refer the young Student, for the obtaining a Knowledg of these things, to the following Authors, who have learnedly treated of their Forms, Composition, Structure, Texture, and Configurations, of their Situations, Communications, and Connexions, of the Vessels proper to them, and common to others, the several Relations they bear to each other, *&c.* and their proper Offices and Uses. But that he may not be perplex'd in his Thoughts, which to prefer among that large Catalogue of Authors who have treated upon these Subjects, nor be discountenanc'd by an Opinion of a necessity of perusing all, I shall, for his Ease, recommend one that has deliver'd an intire Body of Anatomy: Not that his Discoverys in that Art transcend others, or that his Arguments concerning the particular Uses of the Parts are more convincing; but that he having, with great Pains, collected the Labours and Opinions of most others, and inserted a great many of their Figures, the young Student may find a Compendium of most others in his Treatise, without being at the Toil of perusing them himself, *viz.*

Thomæ Bartholini Anatomia Renovata.

But if he would learn the Opinion of other great Men, as well about the Structure as Use of the Parts of a Human Body, from their own Works, he may, at his Leisure, consult these following, *viz.*

Claud.

Claud. Galen. de Anatom. Administrationibus. Chap. 3.
——— *De Ossibus.*
——— *De Venarum, Arteriarum Dissectione.*
——— *De Nervorum Dissectione.*
——— *De Musculis.*
——— *De Usu Partium, &c.*
Meletius de Natura, Structura Hominum.
Laurentii Historia Anatomica Humani Corporis.
Casp. Bauhinus de Corporis Humani Fabrica.
Jo. Bokelius Anatom. sive Descriptio Humani Corporis Partium.
Gab. de Zerbis Anatom. Corporis Humani.
Realdus Columbus de Re Anatomica.
Pet. Matthæi vivæ Imagines Humani Corp.
Veslingii Anatomia, per Blasium aucta.
And. Vesalius de Humani Corporis Fabrica.
Riolani Opera Anatomica.
Adrian. Spigelius de Humani Corp. Fabrica.
Jo. Valverdi Anatom. Corporis Humani.
Gab. Fallopii Opera Anatomica.
Volch Coiter Tabulæ Anatomicæ Partium Humani Corporis.
Lud. Vassæus in Anatom. Corporis Humani Tabulæ.
Jul. Casserii Tabulæ Anatomicæ.
Diembroeck Anatom. Corporis Humani.
God. Bidloo Anatomia Corporis Humani.
Landi Anatomia Corporis Humani Partium.
Daniel le Clerk Bibliotheca Anatomica.

Besides these, the young Student may find a large Number of others, as well of our own Country as of other Nations, who have learnedly imploy'd their Pens upon this Subject; some in writing compendious Bodys of Anatomy, others in describing particular Parts,

Chap. 4.

Parts, and others in making Anatomical Observations and Discoverys; several of whom are already mention'd, where I have treated of such Parts as they have describ'd, and others he will of course meet with; others he may be readily acquainted with, such as *Gibson, Keil, &c.*

CHAP. IV.

Inorganical Parts, Blood, Spirits and Juices. Fluids a Part of a Human Body. Fluids contain'd in a Human Body, have Propertys peculiar to them. 2. *What are those Propertys in the general, and what in the particular Nature of the Blood. Uses of the Blood. Nature of the Spirits. Uses of them. Nature of the separate Juices. Their Uses. Some useful, others excrementitious. Kinds enumerated. The Antients said little of these Juices.* 3. *The Parts themselves, and their Relations, to be consider'd. Parts of Matter, as a Human Body, to be externally mov'd two ways, either by Impulse or Gravitation. A new Power of receiving Motion added as an animated Body. Two kinds of Motion proper to it, Voluntary and Involuntary. The latter how effected. The former dependent on the latter.*

Inorganical Parts are Blood, Spirits and Juices.

1. THE Inorganical contain'd, or fluid Parts of a Human Body, are those whose minute and component Particles are (like those of Water, Wine, Milk, *&c.*) continually

continually moving, having no Union, Connexion or Consistency, but are, in their very Natures, prepar'd and fitted to separate from each other, whensoever freed from the Imprisonment of the solid Parts in which they are contain'd. Those in a Human Body, are what we call *Blood*, *Spirits* and *Juices*. Chap. 4.

The inorganical, or fluid Parts, are imprison'd and kept together by the Consistent, and likewise impel'd and mov'd forward by them.

These Fluids, altho bound up and retain'd in the Confines of a Human Body by the organical and consistent Parts; yet are to be consider'd as a real Part of such a Body (notwithstanding they were not antiently so esteem'd) in that they strongly contribute to the performance of all the Powers, Actions and Motions of the same, and bear a Habitude and Relation to the several Parts, and enjoy their proper Offices, for the supporting and continuing the natural Oeconomy of the whole Man. But these fluid or contain'd Parts not only preserve the intestine Motion of their minute Corpuscles, by which they are accommodated to the Figure of the Organ in which they are contain'd, and by which they are prepar'd (according to the Laws of Motion and Gravitation) to leave their Prison, whenever a convenient Passage is either made for them, or forc'd by them. But as they are a part also of a Human Body, they have some new Facultys or Propertys added to them, which continue no longer than the time they remain a part of such a Body: for as they are there contain'd in their proper Vessels, so they are incessantly mov'd forward in such Vessels, and by that Motion hindred from descending according to the Laws of Gravitation; whereas when they

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they are once stript of that progressive Motion, they naturally, according to the Laws of Gravity, descend, till hindred by some resisting Body; and then being stopt in their Descent, they usually swell the Part.

The Fluids in a Human Body contain'd in their proper Vessels, and always mov'd forward.

2. *These two Propertys*, viz. *Being contain'd in proper Vessels, and Being continually mov'd forward in such, are what appertains to these Fluids, so long as they remain a Part of a living Human Body:* and therefore whensoever these Fluids either wander or extravasate out of their Channels, or are any ways disorder'd in their Progression in such, it is manifest the Body must be diseas'd, in that the proper Functions cannot be perform'd, when the Parts contributing to such, are not in a Capacity to execute their regular Offices.

Every Fluid has its proper Nature.

And as these two general Propertys may be observ'd in all the Fluids, so there are particular ones which belong to each; for each has its proper Nature by which it is diversify'd from the other, and each has its proper Use which bears a relation to the whole.

What Affections proper to the Blood.

The proper Nature of the Blood, is to be of a red or scarlet Colour (as it appears to us when flowing out of its Vessels, and tho at first it appears uniform, yet the sudden Change to be observ'd in it, gives a full Proof of the Heterogeneity of its Nature) to be in Temper warm, and to move perpetually in Circulation; to pervade and glide thro every Region of the whole Body, and its Parts to be in a continual Flux.

The proper Office and Use of the Blood is to cherish and warm every part of the whole

whole Body, to be assistant in the Motion of the Organs, to repair and nourish every Membrane and Vessel, to furnish the Brain and *Genus Nervosum* with Spirits, and to supply every secretory Vessel with Materials for Juices. And that it may not want Quantity to answer these Uses, it is, in the manner of a Fountain, continually supply'd by secret Springs, which flow into it at certain Places; and those Springs are fed by what we eat and drink: for our Aliments, descending into the Stomach and Bowels, dos filtrate, and ascend the Lacteal Vessels, and softly drill into the Subclavian Veins, to supply the Blood with all Necessarys, for the cherishing and repairing all the Movements and Moveables of this wonderful Machine. Chap. 4.

The Nature, Offices and Uses of the Spirits.

The Spirits are in their very Natures invisible, and therefore never to be observ'd by any sensible Qualitys, but are readily discover'd by their Operations, which are experienc'd to be of two sorts: In the one of which they impart or communicate Motion to the Organical Parts, and so appear to be the first Movers or Springs that set and continue the Machine in Motion: In the other they appear to be the Instruments in conveying, and giving Perception or Sensation.

The Juices, tho all separated from the Blood, yet differ among themselves.

The proper Natures of the several separate Juices are as different as their Kinds; but notwithstanding the great Diversity between them, yet they are all promiscuously separated and prepar'd out of the Blood by proper Vessels adapted for that End. Some of these Juices are of direct Use for the very

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ry continuance of the natural Functions of the Body; others are only indirectly so, in that they only consist of superfluous Matter; and therefore, if not discharg'd, would incommode the Organs in performing their Offices, and so injure, and gradually destroy the whole Oeconomy of Nature.

All the kinds of these Juices evidently receive their differing Forms and Qualitys, by which they are to be distinguish'd, from the Vessels wherein they are prepar'd; because no such Propertys are seen in the Blood, but immediately appear in the Juices that have once pass'd such Vessels.

Of the first sort of these Juices, *viz.* such as are of direct use to the Body in preserving its Oeconomy, are to be numbred,

Some Juices directly contribute to the Health of the Body.

(1.) The *Saliva*, or that Juice which flows into the Mouth, for the moistning and lubricating those Parts; and this, mixing with the Aliments, seems to be of great use for the mashing and dividing it into Parts.

(2.) The *Bile* which, being prepar'd in the Liver, descends into the Bowels, and is experienc'd to contribute to the fitting of our Food for Nourishment, and is likewise useful in promoting the Motion of the Bowels downwards.

(3.) The Juices pour'd into the Stomach, as also the *Succus Pancreaticus*, *&c.* which fall into the upper Bowels, and contribute to the same purpose.

(4.) All the *Lympha's* separated by the conglobate Glands, or in other Parts, which are again return'd with the Chile into the Blood.

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Little said by the Antients concerning these Juices.

Of the other sort, are all those Liquors or Juices, which are immediately excreted the Body; such as are the Urine, Sweat, what passes out of the Nose, *&c.* for by the flowing of these last out of the Body, all the more noble and useful Parts are preserv'd from an Inundation, which naturally, from what we eat and drink, would overspread them, were it not that the superfluous Parts were continually carry'd off by these Drains.

As to the *Fluid, Contain'd or Inorganical Parts* of a Human Body, Physicians, till near this last Century, have been somewhat sparing in their Labours; either in searching into their Natures and Origins, or in examining into their Uses: for the Theory of Physick, as it was generally receiv'd and taught before the *Harveian* Discovery of the circular Motion of the Blood, and some later of the Motion of the *Lympha*, &c. did not seem to require any great Scrutiny into these Things. For which reason the young Student, who is desirous to learn what has been writ by Physicians concerning the several Origins, Natures and Uses of these different Juices, as they are at present receiv'd, must for the most part be content to narrow his Enquirys to Authoritys, which can boast of no greater Antiquity than the last Century. It is true, he may find a great deal said of *Bile, Phlegm, Melancholy and Blood*, in *Galen*, and most of his Followers, as he may learn from what shall be intimated, when I treat of Diseases; but as to the separate Juices, and their different Natures, Relations and Uses, nothing.

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The Renown'd Dr. *Harvey* having fully demonstrated the circular Motion of the Blood, divers learned Men have since labour'd to improve that Doctrine; some by shewing the Velocity of that Motion, and the Quantity the Heart throws out in each Vibration: whilst others have invented Hypotheses to solve the Reasons of that Motion, and to account for the several Phenomena which may be observ'd in the Nature of the Blood, *viz.* Heat, Colour, *&c.* If therefore the young Student is desirous to read what has been writ upon these Heads, he may consult

Walæus de Chili, & Sanguinis Motu.
Stegelius de Sanguinis Motu.
Entius Apologia pro Sanguin. Circulat.
Lower de Corde & Motu Sanguinis.
Carteſius de Homine.
Hogeland Oeconomia Corporis Animalis.
Conringius de Sanguin. Gen. & Motu Nat.
Gal. Corvinus de Sanguine.
Villa nov. Epiſt. de Sang. Human. Diſtillat.
Hier. Barbatus Diſſer. de Sang. & ejus Sero.
Betts de Ortu & Natura Sanguinis.
Willis de Sanguin. Accenſione.
Boil Apparatus ad Hiſt. Nat. Human. Sang.
Pitcarn Diſſertatio de Motu Sanguin.
Dom. Guillielmin de Sanguin. Natura & Conſtitutione Exercitat. Phyſico-Medica.

I need not refer the young Student to Authors who have treated of the separate Juices, by reason those are but the same who have particularly imploy'd themselves about the Vessels in which they are secreted, as for example

Le Graaf de Pancreate.
Glisson de Hepate, &c.

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as has already been intimated. As to the general Reason and Nature of Secretion, he may consult

Charlton Oeconomia Animalis.
Cole de Secretione Animal. Cogitat.
Specimen Physico-Medicum de Corp. Hum.

3. The young Student having obtain'd a competent Knowledg of the several Parts which constitute a Human Body; the next thing which seems of course to require his Consideration, is the comprehending the mutual Dependencys and Relations which these Parts bear to each other, in their so regularly co-operating, and so orderly conspiring to the performance of the several Actions, Motions and Operations made and transacted in the whole Body.

A Human Body, as it is a natural Substance, may be mov'd by Impulse or Gravitation.

But that he may form a just Idea of these things, it will be necessary for him first to consider, that a Human Body is a natural Substance; and that its Parts are capable of being mov'd two ways, *viz. by Impulse*, that is, by a force immediately communicated by another Substance; and *by Gravitation*, that is, by virtue of a Power inclining all natural Substances to tend downwards.

Perception and Self-Motion are Powers added to a Human Body.

(2.) He is to consider it as a Substance to which some new Powers or Excellencys are superadded, which are not to be observ'd in other Substances; such as are the *Powers of Perception and Self-Motion:* for these are only observ'd in Substances organiz'd into *Human*, or at least into *Animated Bodys*; and therefore always cease upon the Dissolu-

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tion of the Form and Harmony of the Parts. And that by virtue of this superadded Power, the Body becomes capable of receiving a new kind of Motion, *viz.* a Motion excited *by Irritation*; that is, where the Power in the Effect far transcends the Power receiv'd from the Cause: as he may readily observe by *Purging or Vomiting*; in which the Motion, excited in the *Stomach or Bowels*, does far exceed the Motion in any part of the Medicine, which creates that Operation.

Motion by Irritation.

Voluntary and Involuntary Motion in a Human Body.

(3.) He is to consider it as adorn'd with two sorts of Motion, which intirely depend upon the Form and Harmony of its Parts, and subsist no longer than those remain, *viz. Voluntary and Involuntary:* The first of which, when regular and orderly, is directed and govern'd as the Man pleases; and therefore administers a pregnant proof of an active Power of Self-Motion. The last is naturally perform'd without his Knowledg or Consent, being intirely dependent on somewhat without the Body: for it appears to be began by the *Parents in Coition*, and to be supported and continu'd during the residence of the *Fœtus in the Womb*, by an incessant Impulse receiv'd from the *Organs of the Mother*. For the Parts of the Fœtus are so divinely contriv'd, and so wisely plac'd, that they communicate (by the means of Vessels prepar'd for that purpose) with those of the Mother; by which means the Blood of the Fœtus is in that State preserv'd in a progressive Motion, and so a Life continu'd in the Infant by the Influence of the Mother. But no sooner is the Child brought into the larger World,

Involuntary Motion, how begun, and how continu'd.

World, and disintangled from the wrapping Membranes, and so intirely excluded from receiving any farther Support, for the continuance of its Existence, from the Mother's Body, but is for the future to remain a separate and independent Being, than it immediately receives a new Assistance for the making and continuing that Life, which before was preserv'd by the Mother's Influence: for then the outward Air immediately rushes into the warm and empty Lungs, and so presses the tender Vessels, that the Blood contain'd in them is forc'd to take a new Course, *viz.* to leave the strait and narrow Passage of the *Foramen Ovale*, and run thro the more open Channels into the Heart, which being awaken'd and irritated by the Presence of this new Comer, is excited to move: And by that Motion the Blood is thrown out of its Ventricles, and forcibly drove in Circulation thro every Member of the whole Body; and this Motion of the Heart never after intirely ceases, so long as Life remains. The manner of the *Fœtus* communicating with the Vessels of the Mother's Womb, may be learn'd from Chap. 4.

Needham Disquisitio Anatom. de Fœtu Form.
Le Graaf de Organis Mulierum.

The manner of the Blood's forsaking the Passage of the *Foramen Ovale*, and taking a new Channel by the Heart and Lungs, is graphically describ'd by

Lower de Corde, by *Folius*, *Ruisch*, &c.

Chap. 4. The natural and physical Reason of this Change in the Course of the Blood, is explain'd and demonstrated in my

Specimen Physico-Medicum de Corp. Human.

Voluntary Motion not merely Physical.

The Voluntary Motion, observ'd in most of the exterior Members, and regulated at the Will of the Man, seems not to be deriv'd from a Cause perfectly Physical (taking that word in a general sense) but is a Power superadded to Substance, when organiz'd into a Human, or at most into an Animated Body. But notwithstanding all this, in that the Instruments, *viz.* the Spirits imploy'd for the transacting this Motion, are supply'd out of the circulating Blood; and the Circulation of that Liquor being made by the Vibrations of the Heart, this Power of Self or Voluntary Motion, does only begin when the Spirits and Organs are fitted to perform it; and accordingly is first observ'd at the Instant, call'd the *Quickening of the Child*, and is again sometimes destroy'd, impair'd or lost, from the Default or Infirmity of the Instruments (notwithstanding Life continues) as sometimes is observ'd to happen in those Cases we term Palsys. What Nerves are the Instruments of Voluntary, and what of Involuntary Motions, and from what Provinces of the Brain such are deriv'd, the young Student may learn from

Voluntary Motion depends on the natural one.

Willis Cerebr. Anatom. & Neurologia.

CHAP.

CHAP. V.

Next thing the young Student is to be instructed in is Pharmacology. The Parts of it. Knowledg, in respect of Simples, of two Sorts, viz. *a Knowledg of such simple Substances, and a Knowledg of the Use of such Substances. Simples us'd in Physick of three Sorts,* viz. *Plants, Animals, Minerals. 2. Phytology a pleasing Amusement. New Plants discover'd. 3. Knowledg useful, or only amusing. Number of Native Plants in modern Use not great. Such as are in Use to be principally regarded. Useful Plants, either in Compositions, or by themselves. 4. Best way to know Plants. 5. Zoology. Five sorts of Animals us'd in Physick. 6. Minerology. What Substances contain'd under that Appellation.*

1. THE young Student having advanc'd thus far, the next step he is to take is to inform himself in those Substances which are to be the Instruments he is to imploy in the Use and Practice of his future Art.

Materia Medica *a copious Subject.*

Pharmacology, or a Knowledg of the *Materia Medica*, as it is at present, but more especially as it has formerly been esteem'd, is a Subject of a very large Extent: for to acquire any mighty Perfections in this, he is to travel not only upon the Surface of the Globe, to know Plants and Vegetables; but

Chap. 5. he is to dive into the Deep, to become acquainted with the watery Inhabitants; he is to dig into the very Bowels of the Earth, in search of Metals and Minerals; he is to traverse the Woods and Mountains, to hunt after Animals; for all these several Parts of the Universe furnish Substances to be us'd in this Art: As the young Student may collect from what several learned Authors have writ concerning these things, as

Renodæus de Materia Medica.
Dioscorides de Materia Medica, cum Comment. Marcelli Vergilii.
Jo. Tilemanni Appendix ad Aphorism. Therapeut. de Materia Medica.
J. Georg. Macasii Promptuar. Materiæ Medic.
Christ. Margravii Mat. Medica contract. &c.

Medicines in present Use not numerous.

But if he is satisfy'd with a moderate Knowledg of such Substances as are of a real Efficacy and known Use, he may, without great Difficulty, be inform'd of them.

Two sorts of Knowledg, viz. that of the Substance, and that of the Virtues of a Substance.

But, first asking Pardon for the Impropriety, I shall beg leave to observe, there is usually suppos'd amongst Men a *twofold Knowledg of Substances* us'd in Physick, *viz.* a Knowledg of the Substance it self; as for instance, the knowing of *Rhubarb*, *Senna*, &c. from other things: and, Secondly, a Knowledg of the suppos'd Virtues or Efficacys of such a Drug, when perhaps the Drug it self is not precisely known. The first is only learnt by Experience, the last is often believ'd from the Authoritys of others; but the last, without the first, seems to be of little, or indeed dangerous Use: for notwithstanding

withstanding by such Helps he may fill his Head with a Troop of Ideas concerning the describ'd Efficacys and Virtues of *Rhubarb* or *Senna*, &c. yet he does not know whether the first is an English Dock, or the last the Leaves of Clover: and then it is evident, in his Practice, he must confide in the Integrity of every Plant-gatherer, Herb-woman or Retailer; for he reposes as much Faith in these People for the Instrument he imploys, as he does in his Authors for their Virtues: and this is sure to be like *Don Quixot*'s Lover, a Physician only by Hearsay. Chap. 5.

Medicines either simple or prepar'd.

Substances in use for Medicines, are either simple or prepar'd. By simple Substances are to be understood such things as are us'd in Physick in the very same Dress as Nature produces them.

By prepar'd, such things as are someway alter'd by Art.

Simple Substances, us'd for Medicine, are taken either out of the

Vegetable, Animal, or Mineral } Kingdom.

Vegetables are either { Plants, Shrubs, or Trees.

Medicines from Plants are { Whole Plant, Roots, Flowers, Seeds, Leaves, Juice. } From Shrubs, { Bark, Wood, Flowers, Berrys, Fruit, Gum, Roots.

From

From Trees,
- Bark,
- Wood,
- Roots,
- Flowers,
- Fruit,
- Leaves,
- Gum.

Doctrine of Vegetables a copious Subject.

2. Phytology, or the Doctrine of Vegetables, is a copious Subject, as being a Field adorn'd with an almost infinite Number and Variety of very different Substances; and, as has been noted, contains two Parts, the Knowledg of Vegetables, and a Knowledg of the Efficacys and Uses of Vegetables.

The Surface of this vast Globe is repleniſh'd and adorn'd with such an infinite variety of Plants, that to acquire such a Knowledg, as to be capable to assign to each (that has been honour'd with a proper Name) its Tribe or Kind, is a Task which may long imploy a busy Head, and will indeed afford a pleasing Amusement to such as incline to weary themselves in these kind of Speculations. For here the industrious Enquirer may not only delight himself in finding out the Names of Plants, formerly describ'd or painted; but may also frequently please himself in the Discovery of some new, or as yet unobserv'd Vegetable: For notwithstanding Nature is usually regular in all her Works, and accordingly the like are produc'd by the like (where her Instruments are at liberty to act according to her Laws) yet in the Production of Vegetables, what by a Diversity in the Nature of Soils, what by a Difference and Intemperature of Weather

ther and Seasons, what by some resisting Obstacles in their Vegetation, or some other Accident, she is so disturb'd, as sometimes to decline from such her wonted Regularity, and so produces Plants which do not precisely resemble those from whence they proceed: and such being observ'd by the busy Botanist, are afterwards esteem'd as a new sort of Vegetables. Chap. 5.

3. The Repute of Knowledg carrys a Lustre, and raises an Esteem of the Person who is believ'd to possess it; and so becomes as serviceable to his Character, and as useful to his Reputation, as it is pleasing and amusing to himself. But there is a vast Difference in Knowledg: for there is a speculative Knowledg, which only concerns our own Amusements; and a practical and useful Knowledg, which is principally imploy'd in doing or procuring Good to Mankind. The Knowledg of Vegetables, which are of real Use in Physick, is to be valu'd as a useful Knowledg: But the imploying our time in the Knowledg of Plants, which no way contribute to Use, is only pleasing and amusing. The first is not difficult to be obtain'd; the Number of useful Plants, which are Natives of our Soil, and of common Use in Physick, being not very large; and the Numbers perhaps of such as are of necessary Use, much narrower than those in present Use.

Knowledg either Speculative or Useful; the first concerns our Amusements, the last the Benefit of others.

The Plants, which directly concern the young Student's Knowledg, are either such as are administred in the Form and Dress in which Nature gave them; or such as are Ingredients in the Compositions or Preparations in modern Use. The

Chap. 5.

The Names of the first sort may easily be collected out of the modern practical Writers; and indeed, in respect of that infinite variety of Simples the Globe furnishes, are but few: for example, some few are us'd in acute Diseases, such as *Sage*, *Dandalion*, *Wood-sorrel*, &c. some Bitters likewise, as *Carduus*, *Centaury*, *Chamomile-Flowers*, &c. some Aromatics, as *Penny-royal*, *Rosemary*, *Marjoram*, &c. There are some others us'd in Chronics, *viz.* some Roots, as *Horse-Radish*, *Chervile*, *Parsly*, *Fennel*, &c. some Herbs, as *Scurvygrass*, *Watercresses*, *Brooklime*, &c. some Bitters, as *Wormwood*, *Bugbane*; some that are esteem'd Uterine, as *Rue*, *Mugwort*, *stinking Orridge*, &c. some Pectorals, as *Liquorish*, *Ground-Ivy*, *Maiden-hair*, *Hart's-Tongue*, &c. and some few others that are of these sorts, and suppos'd to respect particular Parts, as some *Hepatic*, some *Spleneticks*, as *Agrimony*, *Tamarisk*, *Spleenwort*, &c.

The Names of the second Sort are to be found in the several Compositions and Preparations in modern Use, contain'd in the *London*, *Batean*, *Augustan Dispensarys*, &c. viz. in *Compounded Waters*, *Spirits*, *Syrups*, *Electuarys*, *Species*, *Pouders*, *Pills*, *Lohochs*, *Troches*, *Tabulets*, *Oils*, *Ointments* and *Plaisters*.

The best Method to know Plants is from themselves.

4. The best and certainest Method for the young Student to arrive at the knowledg of Plants, is by the Plant it self; which being shew'd to him in its Verdure, will give such an Impression, as will not readily wear off; or if conveniently plac'd between Papers, may be so preserv'd as to give livelier Ideas than any Representation drawn by the most curious Artist. How-

Chap. 5.

However, if he is desirous to inlarge his Knowledg to the numerous Tribes of Simples, which the indefatigable Labour and Industry of Men have observ'd and discover'd, he may consult the following Authors: some of whom have largely treated of their Virtues, Efficacys and Uses; whilst others have only nam'd them; and others describ'd and painted them out, observ'd their flourishing and declining Seasons, the Soils they delight in, the Countrys, Climes and Places they best thrive in: others have reduc'd them into certain Tribes or Classes, from a Likeness to be observ'd, either in their Roots, Flowers, or Seeds, *&c.* Amongst these, as deserving to be first nam'd, are,

Jo. Ray Historia Plantarum in Genere.
——*Synopsis Method. Stirpium Britan.*
——*Methodus nova Plantarum.*
Rob. Morison Historia Plantarum Universalis.
Johnston *upon* Gerard's *History of Plants.*
Sharrock's *History of Vegetables.*
Matthiolus in Opera Dioscoridis Comment. cum Notis Caspar. Bauhini.
Joh. Bauhini & Jo. Chabræi Histor. Plantar. Universal.
Leon. Thurneisseri Historia, seu Descriptio Plantarum.
Dom. Chabræi Stirpium Icones & Sciagraphia, cum Scriptorum consensu & dissensu circa eas, &c.
Ant. Pinæi Histor. Plantarum Epitome.
Mat. de Lobel Plantarum Historia.
Emen. Konig. Regnum Vegetabile.
——*Phytologia Britannica.*

Johnston

Chap. 5.

Johnston Notitia Regni Vegetabilis.
Joh. Costæus de Universa Plantarum Natura.
Pet. Borelli Hortus, seu Armamentorum Simplicium Plantarum Animat. &c.
Pet. Lauremburgii Apparatus Plantarius.
Rem. Fuchsius de Herbarum Notitia, Natura, atque Viribus.
Remberti Dodonæi Stirpium Historia.
G. Turre Catalogus Plantar. Horti Patavini.
Car. Clusii Historia rariorum Plantarum.
Ja. Bontii Historia Plantarum apud Indos.
Prosper. Alpinus de Plantis Ægypti.
——————*De Plantis Exoticis.*
J. Veslingii Observationes in Prosp. Alpinum de Plantis Ægypti.
Paræneses ad Rem Herbariam.
Jo. Hernandez nova Plantarum Mexican. Historia.
N. Monardis Simpl. Medicament. ex Occid. India delat. Historia.
Fab. Columnæ Histor. aliquot Plantarum.
Joh. Fragosi Aromatum, Fructuum, & aliquot Simplic. Medicament. Histor.
Sloan Catalogus Plantarum Insul. Jamaicæ.
Gasp. Bauhini Pinax Theatri Botanici.
Paul Ammani Supellex Botanica.
——————*Character Plantarum Naturalis.*
Hen. van Rheede Hortus Indicus Malabaricus.

Doctrine of Animals.

5. Zoology, or the Doctrine of Animals, so far as it relates to such whose Parts have any share in the *Materia Medica*, is of a much narrower Compass than that of Vegetables.

There

There are Parts of five sorts of Animals us'd in Physick, Chap. 5.

Viz.
- Perfect Animals,
- Birds,
- Fish,
- Insects,
- Reptils.

Of these in some the whole Animal is us'd, in some only some Parts; the Parts us'd are

Flesh,	as *E. G.* Flesh of Vipers, *&c.*
Blood	of Goats,
Bones	Human,
Milk	Asses, Cows, *&c.*
Horns	Harts, *&c.*
Stones	as Bezoar,
Teeth	Boors,
Shells,	Oysters,
Claws	Crabs, Elfs,
Fat	Hogs, Man's, *&c.*
Dung	Pigeons, Goose, *&c.*
Urine	Man's, *&c.*

The whole Animal us'd are some Fish, as the *Skenkius.*

Some Reptils,	as Worms, Vipers, Serpents.
Some Insects, small Flies, *&c.*	as Cantharides, Cochinells, *&c.*
Some shell'd Creatures,	as Snails.

The young Student will find the Names of such Animals as make any part in the *Materia Medica*, and are of present use, in the modern *Pharmacopeia:* and it is needless to direct the Knowledg of such Substances, because, if they are Natives of *Britain*, his own Observations will easily inform him; but

Chap. 5. but if foreign and exotic, the Shops will readily furnish him with such things for his Instruction.

But if he is not content with this useful part of Zoology, but is desirous to learn what have been the Opinions of learned Men concerning Animals, he may imploy his Hours in turning over these following Authors.

Aristotelis Historia Animalium.
Ælianus de Natura Animalium.
Plinii Historia Naturalis.
J. Pet. Martelius de Natura Animalium.
Jo. Schroderii Pharmocopœia Medico-Chymica.
Aldrovandi de Animalibus, Avibus, Quadrupedibus, Insectis, Piscibus, & reliquis Animalibus Historia.
J. Johnstoni Historia Naturalis, de Quadrupedibus, de Piscibus, de Serpentis & Insectis.
Pictorius de Quadrupedibus, Avibus, Piscibus, Serpentis.
Schwenckfeltius de Animalibus, Quadrupedibus, Reptilibus, Avibus, Insectis & Piscibus.
Frantzii Historia Animalium sacra.
E. Konig Regnum Animale.
Con. Gesneri Animalium Historia.
M. Lister Historia Animalium, cum Append.
Burgundi Speculum Naturale.
M. Charas Pharmacopœia Regia Galeni Chymica.
J. Bontii Historia Animalium apud Indos.
Geor. Marcgravii Historia Rerum Naturalium.

6. Minero-

6. Minerology, or the Doctrine of Minerals. Such Numbers of these Substances are not so frequently us'd in their native Dresses, as there are of Plants of Animals; yet some of them yield a larger variety of Preparations, than any of the Substances belonging to either of the former Kingdoms. Chap. 5.

Under the Term Mineral are contain'd all
- Earths,
- Metals,
- Marcasites,
- Stones,
- Salts,
- Sulphurous and Bituminous Substances.

Of Earths there are several kinds, *viz.*
- *Terra Japanica*,
- *Lemniæ*,
- *Sigillat.*
- *Bolus Creta*, &c.

Metals,
- Steel,
- Mercury,
- Lead,
- Copper,
- Tin,
- Silver,
- Gold.

Stones,
- *Lapis Hæmatitis.*
- *Judaicus*,
- *Lazuli.*
- Some Gems, as Rubys, Smaragds, Saphirs, &c.
- *Lap. Tutiæ*,
- *Calaminar. fact.*

Marcasites,
- Antimony,
- Cinabar.

Salts
- Armoniack,
- Gem,
- Allom,
- Vitriol of all sorts,
- Common Salt.

Chap. 5. Sulphurous and Bituminous Substances, as
Sulphur Common,
Amber.

These are the principal in modern Use; however the young Student will observe divers others, which are scatter'd about in Compositions in several Dispensatys, and others variously tortur'd by Fire in Chymical Preparations: and it is not difficult for him to learn how to know such Substances, if he has but recourse to the Shops, where he may view them himself. And if he is inquisitive after their Natures, Growth, native Virtues, Uses, *&c.* as they are blazon'd out by Authors, he may read these following; and, in truth, but observe what most Chymists, who work their several Preparations, have said of such Substances before they are analiz'd by their Art, *viz.*

Plinii Secundi Historia Naturalis.
G. Agricola de Ortu & Causis Subterraneorum.
J. Schroderi Pharmacopæia Medico-Chymica.
Albertus Magnus de Mineralibus & Rebus Metallicis.
Lud. de Comitibus de Natura Metallorum.
Hollandii Opera Mineralia.
Guidius de Mineralibus.
Gesnerus de Fossilibus.
Garlandus de Mineralibus.
Besardi Antrum Philosophicum de Mineral.
Johnstoni Notitia Regni Mineralis.
Cæsii Mineralogiæ, sive Naturalis Philosophiæ Thesauri.
Christ. Encelius de Re Metallica.

Cæsepius

CHAP. VI.

Pharmacy, four Parts of it. To know simple Substances. To understand the ordering or preparing such Substances. The manner of mixing them. The Form and Consistency of the Composition. The several Sorts of compounded Medicines. 2. Chymistry. By which Substances are resolv'd into Parts, or several Substances united into one. Fire the Instrument the Chymist imploys for this purpose. Fire not always sufficient without further Helps. 3. Chymistry consists of three general Parts, viz. Distillation, Digestion, and Calcination. Several kinds of Distillation. Distillation divides Substances. Digestion unites them. Calcination divides them.

1. THE young Student having obtain'd a Knowledg of such simple and natural Substances as are commonly us'd in Physick, his next Step is to inform himself in Pharmacy; that he may be acquainted with the Manner and Method of compounding and preparing such Medicines, as being contain'd in the Dispensarys, are kept ready in the Shops for future Use: And this Branch of Physick contains four Parts. The First of which concerns simple Substances us'd in these Compositions, which have been already hinted at under the three Heads of *Plants, Animals, and Minerals.* The *Four Parts of Pharmacy.*

Chap. 6.

Second concerns the manner of ordering and preparing such simple Substances, that they may be fitted for such Medicines. The

Third concerns the Manner of making such Substances into such Medicines. The

Fourth concerns the due Form and Consistency such Medicines should have.

The First of these, *viz.* the knowledg of Simples, is already discuss'd. The Number and Quantity of such Substances as are Ingredients in the Composition, is to be taken from the Receipt.

The Second, the manner of preparing Substances for such Medicines, consists either, First, in the Art of dividing the Parts of such Substances, that they may be fitted so to mingle, incorporate and unite, as to become one *Compositum*: And this is perform'd either by poudering or grinding such Substances, as being of firm and compact Natures, would not otherwise associate and mix with other things. Or, Secondly, in dissolving such Substances as being of tenacious Natures, will not pouder, and so require some Menstruum to open their Bodys, and dissociate their Parts; and this last properly relates to those Substances we call Gums, Rosins, *&c.* The nature of which is such, that they will not equally be dissolv'd by the same Menstruum: However, the *Pharmacopeia*'s usually direct in what they are to be dissolv'd, and so eases the Student in this Part. Or, Thirdly, in refining or despuming such Substances as are the Basis of these Medicines; and this most peculiarly relates to Sugar and Honey.

The

The Third is, the manner of mingling such Substances to make such Compositions: and this part requires great Caution, Judgment and Skill; for the whole Medicine may be spoil'd by the untimely adding the Parts of the Composition. And altho the *Pharmacopeia* will direct the young Student in this; yet his own Observation and Experience will give him the best and truest Information; there being too many circumstantial Nicetys to be deliver'd in general Forms of Words, for the true understanding of this. Chap. 6.

The Fourth is a Knowledg of the due Form and Consistency of such Compositions or Preparations. The Forms of this kind of Medicines are many and different; but however may, for brevity's sake, be compriz'd under these three kinds;

viz. Either as { Liquids, Solids, or Partaking of both.

Liquids are { Distil'd Waters, Spirits, Tinctures, Infusions, Decoctions, Syrups, Oils.

Solids or Dry, { Pouders, Troches, Tabulets, Pills, Plaisters, Corals.

Of these some are preserv'd, being divided into Parts, others not.

Chap. 6.

Medicines of a mix'd nature, as being neither Liquids, nor properly consistent, are { Electuarys, Lohocks, Extracts, Unguents.

The *London*, *Augustan or Batean Pharmacopeia*'s will plentifully furnish with the Receipts of such Medicines as are most in modern Use, and will likewise direct in their Preparations. However, if the young Student desires a larger knowledg of these things, he may abundantly store himself out of these following Treatises.

Quercetani Pharmacop. Dogmat. Rest. & Empiric.
Shroderi Pharmacop. Medico-Chymica.
——*Pharmacop. Bruxellens.*
——*Pharmacop. Lugdun. Reformat.*
——*Pharmacop. Hagiens.*
Renodæi Dispensatorium Galeno-Chymicum.
Nic. Fontani Institutiones Pharmaceut.
Primrosii Ars Pharmaceut.
Mercurialis Tractatus de Composit. Medicam.
Scrib. Largius de Composit. Medicament.
Nic. Alexandrinus de Composit. Medicament.
H. Brunswick de Distillationibus.
Rabæus de Distillatione.
Colle Method. parand. Medicament. adversus Chymic.
Hier. Mercurialis de Medicament. Composit.
G. Wal. Wedelii Pharmacia in Artis formam redacta.
G. Masbachii Collectanea Practica & Pharmaceutica.
G. Rondeletini de Materia Medicinalis & Compositione Medicam. Methodus.

Fernelii

Fernelii Pharmacia.
Geor. Hortii Pharmaceuticæ Exercitat.
Ja. Sylvii Methodus Medicamenta componend.

Chap. 6.

2: It is not sufficient, according to the present State and Practice of Physick in *Europe*, for the young Student to know only the several Substances he is to imploy, or to be vers'd in the Forms and Methods of compounding and preparing mix'd Medicines, according to the common *Galenical* Forms of Poudering, Boiling, Infusing, *&c.* but he must also be farther instructed in another piece of Pharmacy, which is call'd *Chymistry*: By which is understood the Art of analizing, dividing and resolving natural Substances into several differing Parts; which divided Parts, bearing a likeness in some Qualitys, altho produc'd from divers Substances, are usually, by the Favourers of this Art, term'd *Principles*, and were formerly esteem'd three, but now usually five (two inactive ones being added to the other three) and likewise in uniting different Substances into one common one. For the whole Mystrey of the *Spagyrical Art* consists in these two things, *viz.* in resolving Substances into differing Parts, and in uniting different Parts into one Substance: And both these are to be effected by the same Instrument, *viz. Heat or Fire*, which is the great Resolver and Uniter of Bodys; and always in this Art either operates immediately upon Bodys themselves, or mediately by the Interposition of some other Substance.

Chymistry consists either in resolving or uniting Substances.

Fire immediately operates upon Substances when they are singly and separately committed

Fire the Resolver and Uniter of Bodys.

Chap. 6.

mitted to the Tyranny of its Heat; as, for instance, is done in all Incinerations of Plants or Vegetables for the extracting fix'd Salts; as likewise in Substances contain'd in *Crucibles*, and so expos'd to the Violence of its Flames, as is done by some Metals, *&c.*

Fire mediately operates upon Bodys, which are included in *Retorts*, *Cucurbites*, &c. where they are to be tortur'd, till they send out some Parts either in liquid or dry Steams or Fumes; which being collected, the liquid ones are call'd *Spirits*, *or Oils*; the dry ones, *Salts*, *Flowers*, &c.

Fire alone not always sufficient.

Or Fire is only a Help or Assistant to other Substances, in resolving such as are of so obstinate and firm a Nature, that they will not yield to the Violence of its Flame, or at least will not alone afford the Spagyrist what he desires or expects; and therefore he is oblig'd to add some other Instruments to farther him in such Preparations. And this is more particularly done with the Subjects belonging to the Mineral Kingdom; some of which are of so obstinate a nature, that they do not readily yield to Fire; nor will their Parts (as being so nearly united) divide or depart from each other, unless they are forcibly constrain'd by the Entry of some other Substances amongst them: as may be observ'd by most of the Preparations from such Substances, which require Additions of other things for the perfecting them.

Some Subjects likewise of the Vegetable and Animal Kingdoms, tho for the most part of such loose Textures, that they easily yield to the Tortures of the Fire; yet will not afford the Sons of *Hermes* such Productions

tions as they expect or require, unless they are first previously dispos'd for this purpose; either by gentle Motions to allure and invite them to send forth their useful Parts; or by the addition of some other Substance to force them to it: as may be observ'd from all spirituous Liquors drawn from any Products of Vegetables, as Wine, Cyder, Beer, *&c.* as likewise from volatile Salts drawn from the Parts of Animals. Chap. 6.

3. All the Ways and Methods the Spagyrist uses for the torturizing Substances, in order either to force them to confess their Natures, or to oblige them to yield such Preparations as may be of use in the Practice of Physick, may be reduc'd to three sorts; each of which, it is true, may be branch'd into some subordinate kinds, *Chymistry consists of three Parts,* viz. *Distillation, Digestion, and Calcination.*

viz. { Distillation, Digestion, Calcination.

Distillation, as strictly compriz'd under this Art, is perform'd either by Cucurbits or Retorts: the first is done by a gentler Fire, and so is more in use for the rectifying and refining of Substances, which have already been forc'd by the last; or else is us'd for such Substances as readily and easily emit their nimble and volatile Parts. *Distillation and Calcination divide Substances, Digestion unites them.*

The last is perform'd by a more violent Heat, and so is us'd upon such Substances as will not yield to the first; and what is thus drawn, is for the most part better'd and refin'd by the first.

By

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By Distillation the Parts of Substances, before blended together and united, are to be separated and divided; for those which ascend or are rais'd by this Operation, are by that means divided from those which remain in the Cucurbite: Besides, the ascending Parts do often divide from each other, as appears by the Oil, and sometimes the Salt, leaving the more spirituous Part.

In Digestion, the Parts of differing Substances are, by the means of that Operation, to be united and incorporated; as we may observe by Tinctures, *&c.* in which two or more Substances are to be made one.

In Calcination, the Parts which before that Operation were united and conjoin'd, are by that dissever'd and disjoin'd; and the useful Parts are to remain, whilst the others are consum'd or evaporated; as may be observ'd in the Incineration of Vegetables, as likewise in Minerals prepar'd in open Fires, or reverberatory Heats.

The several Substances that are to be prepar'd by this Art; the Vessels, Furnaces and Instruments, *&c.* that are to be us'd in such Preparations; the Methods, Ways and Manners by which they are to be done; and the Efficacys, Virtues and Uses of such, may be found in the following Treatises.

Jo. Rudol. Glauberi Opera Chymica, viz.
——— *Furnus Philosophicus.*
——— *Pharmacopæia Spagyrica.*
Le Febure's Compendium of Chymistry.
Lemery's Course of Chymistry.
Jo. Beguini Tyrocinium Chymicum.
Jo. Hartmanni Opera omnia Medico-Chymica.

Zeigleri

Zeigleri Pharmacopæia Spagyrica.
Adrian. Minsytchii Armamentum Medico-Chymicum.
Angel. Salæ Opera Medico-Chymica.
Raymond Lullii Testamentum Universam Artem Chymicam complectens.
——— *De Secretis Naturæ Magia Nat. &c.*
——— *Secreta Secretorum Codicillus, seu Vade mecum.*
Basilii Valentini Azoth, sive Aureliæ occultæ, &c. prout extant in Val. Theatri Chym.
Currus Triumphalis Antimonii.
Tractatus Chymico-Philosophicus.
Oswal. Crollii Basilica-Chymica.
Dan. Bornelli Iatro-Chymicus, sive de Præparat. & Compositon. Medicament. Chym. Tractatus.
Ashmole Theatrum Chymicum Britannicum.
Guer. Rolfinchii Chymia in Artis formam redact. Dissertat. Chymicæ.
Gunth. Bellichii Observat. & Parad. Chymiaticæ.
Andreæ Libanii Opera Chymica.
The several *Pharmacopæia* of *Quercetan, Shroderus, Renodæus.*
The *Mantista* of *Zwelfer, Pharmacopæia Augustan.*
Dan. Milii Pharmacopæia Spagyrica, &c.

CHAP.

CHAP. VII.

The former Preliminarys gone thro, the Natures of Medicine to be consider'd. All Medicines to be compriz'd under two sorts, viz. *such as evacuate, or such as alter.* 2. *Medicines natural Substances. Nothing preternatural in their Operations.* 3. *Cautions, that the young Student may not misunderstand the Author. A summary Recital of the Opinions of the Antients concerning the Operation of Medicines. Chymists, in their Notions of the Operation of Medicines, do not differ from the* Galenists. 4. *Of Medicines procuring Evacuations. Two different Operations of such. Alterative Medicines where they operate. Medicines procuring Evacuations, which exert their Efficacys in the Blood, five several sorts.* 5. *Salivation effected by Mercurials.* 6. *Medicines esteem'd Diureticks, of different natures. Antients us'd that Word in different Senses from the Moderns. Opinions of the Antients touch'd at.* 7. *Diaphoretics, either simple or compound. Operations.* 8. *Hysterics, various sorts in present and antient Use.* 9. *Pectorals what. Their Operations. These five Evacuations are effected from a Disturbance in the Blood it self. Other Evacuations by the Organs.* 10. *Three sorts of Emetics.* 11. *Cathartics, their several kinds. Antiently denominated from the Humours.* 12. *Other Evacuations,* viz. *Sneezing, Blistering.*

THE

Chap. 7.

THE young Student having gone thro the former Preliminarys, in order to fit himself for this useful Art, he is next to learn the Nature and Use of such Instruments as are to be imploy'd in his future Practice.

Medicines of two sorts, such as evacuate, or such as alter.

Altho the *Materia Medica* is made up of an almost infinite variety of natural Substances, as has been already intimated; yet all these, in respect of their Operations, may be compriz'd under two sorts, *viz.*

Such as either procure Evacuations:
Or such as only effect some Alteration.

Medicines but natural Substances.

2. But before he descends to inquire into the Efficacys and Operations of Medicines in a Human Body, it may not be improper for him to observe somewhat concerning their Natures; for by doing that perhaps he may be prevented from being blindly led into a credulous Expectation of Effects, which can in no wise proceed from them in a natural way.

Nothing added to a Substance, when apply'd for Medicine.

In order then to form a right Judgment of their Virtues and Use, it may be convenient for him to consider, that Medicines, *viz.* such things as are to be imploy'd for removing the Infirmitys, or profligating the Diseases of a Human Body, are really but *ordinary and natural Substances*, viz. *Part perhaps of some Vegetable, Animal or Mineral*, which have no Prerogative above other natural Beings; having only obtain'd a new Denomination, in that they are to be apply'd or administred to a Human Body, in order to restore or preserve its Health; and

are

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are call'd Medicines, in that they are supposed to have some Power in the repairing or healing such a Body when diseas'd. A natural Substance then only becomes a Medicine, in that it has a Relation to a Human Body, as being to be imploy'd for the healing or repairing of it. And by this Relation, it is plain, there is nothing added to the Substance (for that in all things as to it self continues the same) but it is only destin'd to some particular Use, and from that Use is dignify'd with a new Character: that, for instance, which in its Nature is only perhaps an *Herb*, *a Seed or Flower*, is, in this new Relation, to be a *Cordial*, *an Opiate*, *a Purge*, &c.

Medicines being only natural Substances, operate in a natural way.

From these plain and easy Considerations, the young Student will quickly perceive that no other Effects can naturally be expected from Medicines, than what can proceed from the Powers and Operations of natural Substances; there being nothing really added to such things, by their being consider'd under a new Relation. And therefore whatsoever Virtues, Efficacys or Operations they exert in a Human Body, must be effected by such Methods as are agreeable to the Nature of such Substances; and consequently that all Medicines, whether they procure Evacuations, or only effect some Alteration, yet still they do both by the common Laws of Nature, *viz.* by the different Kinds and Degrees of Motion: And whatsoever wonderful Effect succeeds upon their Use, arises from the Disposition of a Human Body, in that it is so form'd, as to be capacitated to receive such surprizing Effects from such simple and natural Agents.

3. But

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The Operations of Medicines to be discover'd from the Use of the several Parts of a Human Body.

3. But before I point out to the young Student such Kinds or Forms of Medicines as are most in modern Use; or before I refer him to Authors, who will more fully instruct him in these Matters, it will be convenient I premise, That notwithstanding I have briefly drawn out for him a Scheme of the Offices and Uses of the Parts of a Human Body; by which, assisted with the Authors there quoted, he may without much difficulty apprehend, by what Ways and Methods Medicines must necessarily perform their Operations: Yet in that several of the Authors to whom I refer, especially such as writ before the last Century, have, according to the Philosophy then in greatest Esteem, explain'd the Nature and Operations of Medicines by first and second Qualitys, and I know not what uncertain Facultys (for they often disagree about that) in respecting, and only affecting particular Parts or certain Regions of Human Bodys: Therefore, as some remedy to prevent his being too much puzzled, in the right comprehending what has been writ upon these Subjects, I have endeavour'd to give him the summary sense of such Authors as to these things. And in this perhaps, when he comes to consult such Authors himself, he may sometimes think I have err'd; in that my purpose being only to give some general Ideas of their Opinions (that so he may be either inclin'd to read or omit such accordingly as he believes to be of real use or not) I have only observ'd and collected such things as are generally agreed amongst them, without regarding Forms and Circumstances (which give

Why it is of use to know the Opinion of the Antients about these things.

Chap. 7. give a different Lustre to the same Opinions) and are too numerous and different to be reduc'd under any common Heads.

The Summary of their Opinions.

The Substance of what most of them have said upon this Head, to me amounts to no more than this, That *some Medicines have peculiar Facultys of performing such Operations*; which they only assert without assigning any one Physical Reason for it, more than that occult Qualitys, and unintelligible Facultys, were believ'd agreeable to the Peripatetic Hypothesis, which was then universally receiv'd. For they neither explain the manner of doing it, nor point out the Organs, or at least do not unfold their Uses, which are the Instruments for performing such Operations: they only aver *gratis*, such a Medicine has a *Faculty of Purging*, such a one a *Faculty of Sweating*, or *procuring Urine*, &c. but never explain what these things are, or by what Instruments or Means effected. But of this more particularly hereafter.

It is true, in these last Centurys, since the Peripatetic Doctrine has declin'd in Esteem, Men have adventur'd to introduce some Chymical Phrases as Helps for explaining the Powers of Medicines, in that their Operations have been thought to be inconsistent with the *Galenical* Doctrines: yet notwithstanding they have still left us under the same Difficultys, in that they have not demonstrated how these Effects are produc'd; but would only introduce Chymical Principles in the room of Peripatetic Elements, *&c.* and so leave the same Difficultys they pretend to remove.

4. But

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Two sorts of Medicines that procure Evacuations.

4. But to return, Medicines which are observ'd to procure Evacuations, that is, which have a power of someway forcing the Body to cast out somewhat contain'd in it, may be reduc'd to two sorts, *viz.*

(1.) Such as have a power directly and immediately of themselves to perform this, as Sudorificks, Diuretics, those which move Salivation, *&c.* Or,

(2.) Such as do this by the means and assistance of some Organs of the Body, as Cathartics, Emetic and Sternutory Medicines do.

Medicines which only alter or change some Property, Action or Function of the Body, without any discharge from it, either operate upon the Blood or Spirits, or at least such Juices or Humors as are contain'd in those Parts wherein they are receiv'd, as Stomach, *&c.* But first of those which evacuate.

Medicines forcing the Blood into Discharges.

All Medicines that do directly and by virtue of their own Power, that is, without any intermediate Assistance from any Parts, force or compel the Body into Evacuations or Discharges, that is, to cast or throw out somewhat from it, must necessarily exert themselves in the Blood; by reason it is the Blood only that can or does yield Matter, to be so thrown out or discharg'd: for the Organical containing, or consistent Parts being united, and mutually adhering to each other, and so fix'd and continu'd in their proper Seats, must necessarily remain where Nature has thus plac'd them, and consequently are not directly by the force of Medicines to be remov'd or dis-

Chap. 7. plac'd, in order to be thrown out of the Body: And the several separate Juices, being only Streams deriv'd from the Blood, are not to be effected but by the Blood; since Medicines cannot be convey'd into such Juices, whereby to force them out of the Body, but by the means of the Blood. From these Reasons it is most evident, that Medicines which procure these kinds of Evacuation, must exert themselves in the Blood, and consequently someway perplex, disorder or disturb the Mass, and by that dispose and force it to purge, spew or cast out such Parts as are fitted to pass thro those Passages which are prepar'd for this purpose. And then the Evacuation is denominated according to the Passage by which the Blood spews or throws out its Parts: And the Medicines that force the Blood into such Discharges, are honour'd with Appellations from these Effects. And accordingly those, which procure this Discharge by the Salival Glands, are term'd Medicines causing Salivation.

The Blood is forc'd into Discharges by internal Medicines, five several ways.

Those that procure it by the Kidneys, and so into the Bladder, Diuretics.
Those that effect by the Pores of the Skin, Diaphoretics.
Those that do it by the Uterine Vessels, Hysterics.
Those that produce it by the Breast, Pectorals.

But of these in order.

The first is Salivation.

5. *Salivation*, altho the most powerful of all known Evacuations, yet here in *Europe* is

is of a much later date than any of the others; for its Use does not extend much higher than the two last Centurys, or from about the time the *Lues Venerea* was first known in *Europe*. For then the use of Mercury, for this purpose, was learnt of the *Africans*, by whom it was us'd as a Remedy against nasty and ulcerous Diseases, which are common to the Inhabitants of those Regions. And this likewise is singular to this Evacuation, that it's procur'd only by one mere natural Substance, *viz. Mercury*: altho this is frequently disguis'd in a multitude of Compositions, and chang'd, mash'd and conceal'd in a large number of Preparations; yet such is the unchangeable Property of this wonderful Drug, that its Nature is not to be so intirely destroy'd, but that a little Human Skill will procure a Resurrection of the same Body.

Salivation procur'd only by Mercury.

Physicians have discover'd two ways of applying this powerful Mineral, for the procuring and raising a Salivation, *viz.* either outward or inward.

The first is effected either by Ointments or Plaisters, but usually by Ointments; in which the Mercury is divided into minute Parts by the means of Hog's Lard, Turpentine, or some other oily or unctious Body. But the young Student may find a variety of these Prescriptions, and the Methods of using them, in the practical Writings of

Sydenham Epistola Responsor. de Lue Venerea, &c.

Wiseman's *Chirurgical Treatise and Observations* de Lue Venerea.

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Fernelius de Lue Venerea, and in a multitude of others who have writ of that Subject.

The second is effected either by unprepar'd Mercury, exhibited in Pills, Bolus, *&c.* or with some of its Preparations in divers Forms and Disguises. A multitude of which he may find in Chymical Authors.

This Evacuation may be procur'd likewise by Mercurial Waters; but this being somewhat troublesom, and accompany'd with some Inconveniences, is not so frequently us'd.

The second by Urine.

6. *Diuretics*, or such Medicines as are suppos'd to have Power so to disturb the Blood, as to compel it to throw out its Parts by the Urine Vessels, appear to be Substances of very different Natures. For if we consult the large Catalogues of Medicines, which have by divers Authors been recommended for this Use, we may observe things, which bear no manner of resemblance to each other, to have been highly and equally prais'd for this purpose: we may find a large variety of simple Substances, which carry neither Likeness in Taste or Colour, which bear no Similitude in Form or Shape, which are brought out of different Climes, Soils and Elements, whose very Origin and Production are as contrary as their Appearance are unlike, which are not to be resolv'd into the same Principles or Parts, yet are equally recommended as Diuretics. We may observe several Compositions, made out of contrary and differing Simples, honour'd with the same Appellations;

Diuretics very unlike in their Qualitys.

lations; for which reason it is difficult to reduce them to any certain Heads, and the more especially, since Authors have marvelously disagreed about their Powers, Virtues and Operations. For the Antients (by which I only understand such as writ before the *Harveian* Discovery of the circular Motion of the Blood, and the late Discoverys of the Motion of the other Juices) do not seem by Diuretics to intend such Substances as dispose the Blood to separate by the Kidneys (for the Circulation not being then known, they had form'd no Idea of that) but only meant such Medicines as had a Faculty (as they term'd it) of purging by Urine (for the Kidneys themselves had their *attractive Faculty* to bring the Urine to them) And so Diuretics, in their sense, were only taken for Substances endu'd with Facultys of purging out gross or unnatural *Parts, Humours or Substances*, which lodg'd or adher'd in those Urine Passages. And according to this their sense of the Operation of these kind of Medicines, they divided them into several Classes, according to the several Facultys they were suppos'd to have of purging out particular Things, that were either form'd or resided in those Parts, and were suppos'd to constitute the several kinds of Diseases that were proper to the Urine Passages or Vessels, *viz. Lythiasis, Stranguria, Dysuria*, &c.

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What the Antients intended by Diuretics.

And in conformity to this Doctrine, some were believ'd to be endu'd with a Faculty of breaking or dissolving a Stone, or bringing away Gravel; some of these effected

Chap. 7. this by what they term'd *Manifest*, others by *Occult Qualitys*.

Of the first sort there were a great Variety, as *E. G.*
- *Rad. Apii, Asparagi, &c.*
- *Sem. Petroselin. Urticæ, &c.*
- *Bac. Juniper. Cicer. &c.*
- *Fruct. Alkekeng, &c.*
- *Herb. Altheæ Mal. &c.*

By Occult Qualitys were
- *Lap. Judaic.*
- *Sang. Hircin. &c.*

I have only hinted at some few, to give the young Student a Tast of these things; but if he desires to be inform'd of the mighty Numbers of these kind of Medicines, he need but consult the practical Writers, such as

Sennerti Praxis Medica.
Etmulleri Opera Practica.
Foresti Observationes & Curat. Medicinal.
Hercul. Saxoniæ Pantheum Medicinæ select.
——— ——— *Opera Practica.*
J. Bap. van Helmont de Lythiasi, &c.

Or indeed almost any other; for there being such Multitudes of them, I have only named some few.

There are large Numbers of Diuretics that were recommended as proper in other Diseases of the Urine Vessels, as in Strangurys, *&c.* which likewise may be learnt in such practical Writers, and more particularly in

Zach. a Puteo Clavis Medica Rationalis Spagyrica & Chirurg.
Marcan. Sanctus de Ardore Urinæ.

And

And may likewise be observ'd in several Authors who have treated of natural Substances, appertaining to either the Vegetable, Animal, or Mineral Kingdom. Chap. 7.

7. The third kind of Medicines that procure these Evacuations, are those which produce Sweat, and are term'd Diaphoretics. Of these likewise there is a very numerous Catalogue; a large number of which, that were formerly highly valu'd, are now in a manner disus'd: for Medicines, like most other things, have their Fate to be esteem'd and despis'd by Turns. Diaphoretics in modern Use, are either simple and natural Substances, or factitious and compounded. I term those simple and natural Diaphoretics which are kept unmix'd in the Shops; not but that they are sometimes mix'd and compounded when they are us'd, but not before. Of the first sort of these in modern Use, are the

The Third by Sweat.

Great variety of Diaphoreticks.

Those in modern Use.

Roots of { Contrayerva, Serpentaria Virgin. China opt. & Lapidos. Sarzaparilla.

Woods of { Guaicum, Sanders, Sassaphras.

Herbs of { Sage, Dandalion, Carduus, Scordium, *&c.*

Chap. 7. Compounded and prepar'd Diaphoretics in modern Use are,

Of Electuarys, { Theriac. Andromach. / ——— Londinens. / Mythridat. / Diascordium, / El. de Ovo.

Pouders are { Pul. e Chel. Cancror. Comp. / Antimonii Diaphoretic. / Bezoart. Mineral. / Lap. Contrayervæ. / ——Goæ, *&c.*

Tinctures are { Tinct. Antimon. / ——— Corallii, &c.

These few may give the young Student a Tast of what he may find prescrib'd in the *Pharmacopœia*'s, and what are usually kept in most Shops; and, I think, answer most Intentions, where such kind of Evacuations are really requir'd. Not but that there may be a great Number out of this large Tribe of Medicines, which may as effectually answer the above-mention'd Intention, as those recited. However, since it does not seem altogether necessary for the young Practitioner to perplex his Head with a Multitude, when a few may as effectually answer his purpose; and since his Reputation will incline him to comply with the most fashionable Form, and these abovenam'd are abundantly warranted by modern Practice, I have only, for his Instruction, nam'd those few. However, he need not be unfurnish'd with refin'd Forms,

Forms, if he does but consult Dr. *Willis*, who in his *Pharmaceut. Rationalis*, has *ex professo* treated upon these Medicines; as likewise *De la Boesylvius*, in his *Praxeos Medicæ libri*, *Etmullerus*, &c. Chap. 7.

8. The fourth sort of these Medicines are those which force or discharge by the Uterine Parts: Of these some are simple, and some prepar'd. *The fourth that force a discharge per pudendum.*

Of the first sort are
- Steel,
- Castoreum,
- Crocus,
- Myrrh,
- Sabine,
- Penny-royal,
- Chamomile Flowers,
- Centaury, *&c.*

Of the second sort, are
- Steel, Wines, Tinctures, Pouders, *&c.*
- Tinctures of Castor, Saffron, Myrrh, *&c.*
- Spirits of Hart's-Horn, Armoniac, *&c.*
- Waters of compounded Briony, Pæony, *&c.*
- Troches de Myrrh. Hysteric.
- Ol. Sabin. Succini, *&c.*

The young Student may observe not only by these few just recited, but also by a great variety of others, which he will find recommended in the Practical Writings of eminent Men; that these kind of Medicines, suppos'd to respect the Uterine Parts, are widely

Chap. 7. widely different in their Qualitys; and that some of them are likewise of wonderful use in Diseases, which do not seem to affect the Womb, such as Steel, Centaury, and divers Bitters. And his Experience, when conversant in Practice, will unfold the reason of this; for by that he may soon learn that these operate in a very different Method from those of a stronger Smell, in that they warm and invigorate the Blood, and so promote Bleedings, as well by other Parts, as those of the *Pudendum:* whereas the other seem to impart their Efficacys more immediately upon the Spirits. But of these kind of Medicines the young Student may be furnish'd with Forms out of practical Authors; such as

Sennerti Praxis Medica.
Fernelii Pathologia.
Hercul. Saxoniæ de Morbis Muliebribus.
Foresti Observat. & Curat. Med.
Etmulleri Praxis.
Zacutus Lusitanus de Praxi Medica admirab.
Riverii Praxis Medica.
Willis de Passione Hysterica.
——————— *Hypochondriaca.*
Sydenham Dissertatio Epistolaris de Passione Hysterica.

The fifth that discharge by Expectoration.

9. The fifth sort of Medicines promoting these kind of Evacuations, are such as do it by Expectoration; that is, which have a Faculty to purge and discharge Matter out of the Lungs and Breast, and so are term'd Pectorals: and these are as numerous as those of the former Classes. However,

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I shall only name some few of simple and compounded Medicines which are in modern Use, and leave the young Student to furnish himself with larger Stores out of the Dispensarys and practical Writings of Authors, which shall be hereafter set down for him: Of the Simple there are Roots, Herbs and Fruit; Chap. 7.

Of Roots are { Liquorish, Enulacampany, Ireos Florentin.

Herbs are { Maidenhair, Colts-foot, Ground-Ivy, Scabiouse, Hyssop, Harts Tongue, *&c.*

Fruits are { Jujubes, Sebestens, Dates, Figs, Raisons of the Sun.

Prepar'd and compounded Pectorals are,

Decoctum Pectorale.

Syrups are of { Maidenhair, Colts-foot, Hyssop, Jujubes.

Oximels are of { Squills, Simple, Hyssop.

Lohocks are { *Sanum & expertum.* *De Pulm. Vulp.* *Scillitum.*

Oils

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Oils are of { Almonds, Lintseeds. | Balsams are { *Sulphur. Terebinth. Anisat. Ruland.*

Spirits { Harts-Horn, Sulphur, Armoniac, *&c.*

The young Student may be furnish'd with Forms of these kind of Medicines, under the Heads of *Asthma*, *Dispnea*, *Orthopnea*, *Pthysis*, *Pleuritis*, *Peripneumonia*, *Pectoris & Pulmonum Affectus*, in

Willis Pharmaceut. Rational. par. 2.
Etmulleri Opera Practica.
Hercul. Saxoniæ de Affectubus Thoracis.
Pet. Foresti Observat. Med. and in most other practical Writers.

These five Evacuations are procur'd immediately from the Blood by the Medicine.

These five are the Evacuations suppos'd to be procur'd by Medicines exerting their Powers in the Blood; for in all these the Blood throws out its Parts first, without being forc'd or solicited to it by the Motion of the Organ. For tho the outward discharge by Expectoration, and by the returning of the Urine, is perform'd by Organical Motion; in the first, to wit, by Coughing, or by the Motion of some of the Organs imploy'd in Breathing; and in the last, by the Contraction of the Bladder, and some Assistance from the Muscles of the Abdomen: yet both the expectorated Matter, and the Urine, are first emitted from the Blood, before the Organ can contribute to

to the discharge of them; whereas in the following Evacuations it is exactly the contrary: for in them the Organ forces the Blood to emit Parts to be evacuated, the Motion of the Organ preceding, and accompanying the Discharge. Chap. 7.

10. The second kind of Evacuations are not effected after the manner of the first, *viz.* by any Power of the Medicine operating in the Blood, or in any of the secreted Juices, but are made by the means of the Organs; which being irritated by the Medicine into violent Motion, do, by virtue of that Motion, force the Blood to emit Parts to be discharg'd. And of these which are in any considerable Use, there are but two sorts: The one is made by the Stomach, and is call'd Vomiting; the other by the Bowels, and is term'd Purging. The Medicines which effect the first are call'd Emetics; those that do the last, Cathartics. *The other Evacuations are procur'd by the Organs.*

Emetics, or Medicines procuring Vomiting, have not, like those which purge, been distributed into Classes, from the Difference in Humour which they were suppos'd to have a Faculty to evacuate; but have been sorted according to the Difference observ'd in the Evacuation procur'd by them, and so been divided into Kinds, according to the Degrees they affected the Stomach in forcing it into such Actions as made that Evacuation. For Emetics have usually been consider'd as gentle, mean, or violent in Operations. *Emetic Medicines not usually divided into Classes from the Humours they evacuate, but from their Powers in Working.*

Those

Those of Gentle are
- Warm Water,
- Infusion of Carduus,
- Carduus Posset-drink,
- Infusion of Tea.

And many other things which, by their Quantity and ungrateful Taste, nauseate and turn the Stomach.

Mean Emetics are
- *Rad. Hypecocuahanæ,*
- *Sal Vitrioli,*
- *Vinum Scillit.*
- *Oximel. ejusd.*
- *Cort. intern. Sambuc. &c.*

Violent are
- *Infus. Croci Metallor.*
- *Tartar. Emetic.*
- *Sulph. Antimon.*
- *Fol. Asari.*
- *Turbeth. Min. & Mercurius Vitæ.*

But if the young Student is desirous to be inform'd in the nature of either Vomiting or Purging, and how they are effected by the help of Medicines in Human Bodys, he may consult

Dr. *Willis Pharmaceutice Rationalis*, and my *Specimen Physico-Medicum de Corp. Human. & ejus Morbis.*

Cathartics rank'd into sorts from the Humors they were suppos'd to discharge.

11. Cathartics, Purgers, or Medicines which have a Faculty of soliciting the Intestines into that Motion, which effects what we term Purging, were formerly reduc'd into sorts, from the different Humours they were suppos'd to have a Faculty more particularly to discharge, and accordingly were of four kinds, *viz.*

Chologoga,

Chologoga, or Medicines purging Choler. Chap. 7.
Phlegmagoga, or such as purge Phlegm.
Melangoga, or those that evacuate Melancholy.
Hydragoga, or such as discharge Water.

There was likewise a Fifth compounded of all these, and so nam'd *Panchimagoga*, in that they purg'd all Humours.

Besides these four sorts of Purgers appropriated to the four Humours, they had also large Catalogues of others, which were believ'd to be endow'd with particular Facultys, to purge from particular Parts or Regions. Thus some were thought to purge the Head, others the Stomach; some the Breast, others the Spleen, Liver, Kidneys, Womb, *&c.* as the young Student will observe from Authors who have treated of these Subjects, as

Galen de Purgantium Medicamentorum Facultatibus.
G. Puteanus de Medicamentor. Purgant. Facultatibus.
Tho. Erastus de Medicamentor. Purgant. Facultate.
Dorncrellius de Purgatione Tractatus, &c.

But this Doctrine of some Medicines having these peculiar Powers of purging and drawing from particular Parts (being built upon the *Galenical* Hypotheses of four Humours, and the four general Facultys of the principal Parts, *viz.* the *Attractive*, *Retentive*, *Alterative*, and *Expulsive*) has gradually and naturally lessen'd since the *Harveian* Discovery

Chap. 7. Discovery of the Blood's circular Motion; which being manifestly inconsistent with the *Galenical* Doctrine, such Opinions as were founded upon that, have insensibly declin'd. For which reason I will not entertain the young Student with any modern Forms of Medicines contriv'd to answer such Opinions: But if he is desirous to be acquainted with them, he may find such Forms in great plenty in the *Pharmacopeia* of *Quercetan*, *Schroder*, the *Augustan*, *Renodeus*, &c. under the Names above-specify'd; or he may find large Numbers of formal Prescriptions of such in the practical Authors hereafter mention'd.

Purging Medicines with the greater reason to be consider'd as gentle, mean and violent.

But Cathartics, or purging Medicines, being according to modern Usage, and even Truth it self, with greater reason, consider'd only under Degrees, as being either gentle, mean, or strong in Operation, I shall, for his Information, name only some few of each Classes which are in modern Use.

Gentle are { Manna, Cassia, Damask Roses.

Gentle prepared are { Syrup of Roses, Cichory with Rhubarb, Lenitive Electuary, Cremor Tartar, Sal Catharticum, *Pil. Ruffi, Macri, Alephang.* &c.

Mean simple { Senna, Rhubarb, Aloes.

Strong Simple { *Scamonium*, *Gum. Guttæ.*

Mean

Mean compound of all Forms in use.

- *Decoctum Amarum,*
- *Semæ Geronis,*
- *Elect. e Succo Rosarum,*
- *Confect. Hamech.*
- *Pills Stomach. cum Gum.*
- *Cochiæ major.*
- *Extr. Rudii,*
- *Pul. Diasemæ,*
- Syrup of Buckthorn, *&c.*

Strong prepared,

- Resin of Jalap,
- *Scamonii.*
- *Elaterium,*
- *Pilulæ Lunares,*
- *Ex duobus.*
- *Cochiæ minor.*

But if the young Student is desirous to furnish himself with a greater variety of these kinds of Medicines, that he may select such as will be most pleasing to himself, and grateful to his Patient, he may consult the *Pharmacopeia*'s and practical Authors hereafter mention'd, which will plentifully store him with Forms: Or if he would know what Numbers Nature furnishes for these purposes, he may consult

Gesneri Enumeratio omnium Medicamentor. Purgantium & Vomitor.
Fallopius de Simplicibus Medicamentis Purgantibus.

12. There are other sorts of Evacuation in modern Use, in which the Medicines procure the Discharge by the means of the consistent Parts; and therefore may not be improperly compris'd under this Head, notwithstanding such Evacuations are not perform'd by the help of Medicines internally

Other Evacuations but procur'd by external Application.

Chap. 7. taken, but only outwardly laid: which being observ'd to affect the Part only where they are apply'd, were not formerly compris'd under the Head of general Evacuations, but esteem'd particular. But forasmuch as one of these has lately rose to such a height of Esteem, as to have the Ascendant of all others in acute Diseases; and in that all Parts of the Body, by means of the Circulation of the Blood, and the Communication by the Nerves, may be affected from these, therefore I shall consider them under this Head. These two are what we term Sneezing and Blistering.

One of these is perform'd by the Nose, and is effected by liquid or dry Medicines, which are usually now term'd Snuffs,

As { Errhina's, which are Liquid, and Sternutatory Pouders.

And all Substances, which either create Sneezing, or force the Nose to run, consist of acrid and pungent Parts.

The second of these is Blistering, and this is effected by that sort of Medicines which are call'd Epispastic; which being apply'd and continu'd upon any part of the Body, do so wound the Part, that the thin outward Skin separates from the inward; and Water insinuating between gradually rises, and forms Bags which are term'd Blisters.

But of the Effects and Operations of Blysters the young Student may consult

Willis Pharmaceut. Rational. par. 2. de Vesicat.
Specimen Physico-Medicum de Morbis.

Altho

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Altho there are divers Substances that will effect this Evacuation when apply'd and continu'd to a Human Body; yet the Basis of Medicines in present use for this purpose, are *Cantharides*. Divers Forms of these may be found in the *London* and other Dispensarys, under the Title of *Epispastics*.

CHAP. VIII.

Alterative Medicines. What necessary to be observ'd for the understanding the Operations of alterative Medicines. But three ways by which such Medicines can operate. 2. Sorts of Alteratives observ'd. Such as affect the Blood, either strengthen or relax its Crasis. Sensible Qualitys of the Blood unknown. Operations of Medicines not to be explain'd by them. Senses our only Guides. Nature and Changes of the Blood appear from its Uses. 3. Specificks what. 4. Medicines invigorating the Blood. 5. Medicines relaxing the Blood. 6. Medicines affecting the Spirits. Three kinds. 7. Medicines correcting the Juices in the Stomach. Two sorts. 8. What prov'd. A Summary of the receiv'd Opinions of former Ages concerning these Heads.

Alterative Medicines.

1. THE young Student having thus taken a View of the several kinds of Evacuation, which he may use in his future Practice; and having also had a Taste of those Medicines which may be imploy'd as his Instruments

Chap. 8.

struments for the effecting and procuring them; he is now to advance further, and to consider Substances, which being administred to a Human Body, produce very different Effects; that is, have a Power to alter or change some Property, Quality, Action, Operation or Function of a Human Body, without effecting any Evacuation or Discharge from it.

By what Methods the Operations of such Medicines to be observ'd.

But that he may the better form an Idea of the Operation of these kind of Medicines, it will be necessary for him to look into the Structure of a Human Body, to consider those Actions and Functions which are inseparable from Life; to survey the Organs and Passages by which all things that enter into the Body, whether as Food or Physick, must pass; to observe by what Vessels things receiv'd into it, are dispers'd to all the Regions of it; and to remark and weigh from what Parts all those several Juices, which are continually excreted the Body, are deriv'd; to consider likewise how, and by what Instruments, the distant Parts can be affected from what is receiv'd into our Bodys. And if he will but seriously reflect upon these Things, he will soon be convinc'd that there can be, from the very Nature of our Bodys, and from the Structure, Formation, Situation and Connexion of the Parts of them, but three ways by which these alterative Medicines can any ways exert themselves, in order to make any Alteration in them: And those are either by the Blood, into which several Parts of what we eat and drink are receiv'd, and out of which all our other Juices are separated,

But three ways by which they can effect Human Bodys.

separated, and all our consistent Parts nourish'd. Or, Chap. 8.

(2.) By the Nerves, that is, by the Animal Spirits which reside and inhabit in them, by which all Motions and Sensations are perform'd. Or,

(3.) Upon such Juices as are immediately contain'd in such Vessels where the Medicines are receiv'd, or thro which they must pass; and these Juices can only be either in the Stomach, or upper Intestines, or in the Ductus thro which the Chile passes into the Blood: for after Medicines have pass'd these Parts, they will be intirely mix'd with the whole Mass, and so undergo a new Change there.

2. Medicines that alter the Blood, may, for method sake, be consider'd under two Heads, *viz.* such as are administred when the Blood is observ'd to undergo any sudden and violent Alteration, which is usually signify'd by the word *Fever*; and such as are only us'd in its slow and gentle Changes, which are commonly express'd by the Terms, Ill habit of Body, *Cachexia*, Scurvy, *&c.*

Medicines that alter the Blood, are such as are usually administred in sudden or acute Diseases, or such as are only in chronic or slow.

Those Medicines that are ordinarily us'd in the first Case, *viz.* in sudden Changes of the Blood, may be distributed into two sorts, *viz.* into such as have a power to strengthen and invigorate the Crasis, and by that preserve the Blood from the Mischiefs which must arise from the Loosness, Breaking and Division of the component Parts; (for whensoever the Parts of the Blood too much divide and recede from each other, the Mass will not readily roll about in Circulation) Or into such as have a Faculty of

Chap. 8. relaxing, dividing or breaking the Crasis or Mixture of the Blood, when the constituent Particles are too closely united, and too powerfully adjoin'd. For there being a certain Temper of Blood requir'd towards continuing the Health of the Body, it is plain Diseases may arise as well from this last as from the first reason; in that the natural Separations will be as well alter'd by the too strict Union of the constituent Parts of the Mass, as the Circulation by the Looseness in the Mixture of them.

The Medicines that have the brightest modern Character for answering the first Intention are

- *Margarita Corallia*, and all of that Tribe,
- *Confect. de Alkermes.*
- *de Hyacinth.*
- *Rad. Contrayervæ,*
- *Serpentar. Virgin. &c.*
- Divers Compositions in Cordial, Bolus, Pouders.
- Pearl Cordials, *&c.* with most Vinous Liquors, and Aromatic Substances.

Amongst the second sort are to be numbred

- Emulsions of the cold Seeds, Almonds, Poppy-Seeds, *&c.*
- Barly-Waters acuated with pleasing Acids.
- Several Decoctions of Wood-sorrel, and such Herbs and Roots acuated.
- *Sal Prunellæ, &c.*

These few are sufficient to give an Idea of the Nature and Kinds of such as are in use for this purpose: and the young Student will find

find a variety of Forms prepar'd out of these or such like different Simples, all aiming at the same purpose, to answer both the above-nam'd Intentions, in most practical Authors, such as *Sennertus*, *Riverius*, *Etmullerus*, *Sylvius*, *Willis*, *Fernelius*, &c. *viz.* Forms of the first kind, usually under the Heads of *Malignant*, *Epidemical* and *Pestilential Fevers*, *Small-Pox*, &c. Those of the second kind under the Heads of *Putrid* and *Inflammatory Fevers*, *Pleurisys*, *Rheumatisms*, *hot Intemperys* of Parts, *&c.* Chap. 8.

The Operations of Medicines adjusted to Hypotheses.

For notwithstanding most Authors propose Methods and Medicines (agreeable to the Hypotheses they have espous'd) for the correcting or altering of such Qualitys as their Hypotheses induce them to admit as too predominant; and notwithstanding the Blood, like all other Substances, may be endow'd with such sensible Qualitys, as most, if not all, Hypotheses hitherto invented suppose; yet all such Qualitys arising and depending upon the various Positions, Modifications, *&c.* of the constituent Particles which make and compose the Blood, as well as all other Substances (as has been already prov'd) it is plain, the Modifications, *&c.* of the Particles being alter'd, such Qualitys must; and that such Qualitys cannot be alter'd, unless the Modifications, *&c.* of the Particles are, from whence they proceed. Besides, the Blood being wrap'd up in proper Vessels, and those bury'd within our Bodys, and so conceal'd from our View, the sensible Qualitys that we would pretend to alter, in com-

Qualitys arising from the Disposition of the minute Particles, alter as they are alter'd.

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Qualitys of the Blood not to be known.

plaisance to any such Hypotheses, must be intirely unknown to us, in that we are uncapable to discover them. And it seems to proceed from this Uncertainty, that the several Hypotheses which have been built upon these Qualitys, have been so often disputed, and so diversly alter'd and chang'd; in that a Standard of Certainty has been wanting, whereby to compare and try their Truth and Goodness. For notwithstanding Men have boldly presum'd upon the real Existence of such Qualitys as they have severally us'd for the explaining of Diseases; yet they have never in fact prov'd, that there are such in the Blood, for the forming of such Diseases, as they assign such Qualitys to produce.

Whereas if we content our selves with such Discoverys of the Blood as our Faculltys will reveal, and which are agreeable to such Principles as are manifestly certain, as being evidently prov'd by our Senses (which are the only help the Almighty has given us for this purpose) we must conclude, that as all such Enquirys concerning the Qualitys of the Blood have been hitherto fruitless, so they will, if pursu'd, for ever be so: And that as the Blood is a part of a Human Body, destin'd by Nature for such and such Uses, we are altogether uncapable of discovering any thing of its particular Nature or Qualitys, any farther than as they appear to us from a consideration of such Offices and Uses as are to be observ'd: All of which, so far as our Facultys can discover to us, are founded in the regularity of its Motions, and the

the Equality of its Separations. And therefore the most we can conceive of Medicines exerting their Energys in the Blood, is the quickning or retarding the Motion of the Parts; by which their Union is strengthen'd, and the Mixture or Crasis preserv'd; or the dividing or disjoining them; by both of which the Separations will be affected, and the Qualitys necessarily alter'd. And that the Qualitys of the Blood may be in fact chang'd, by only altering the Positions and Modifications of the component Particles, is most undeniably evident, in that the Colour and Consistency may be at pleasure alter'd, by enlarging or narrowing the Orifice in Vænesection, or by permitting the Blood only to drill slowly out, or to fly out impetuously in a full Stream, in that Operation. Chap. 8.

Amongst Specificks the Cortex Peruvianus *the principal.*

3. Some Authors have recommended a Set of these alterative Medicines as Specificks, in sudden Changes of the Blood; by which Expression they seem to understand Medicines which have some singular Virtues of removing or curing some particular Diseases: And amongst these in modern Use, the *Cortex Peruvianus* bears the first Character.

Altho a great many modern Physicians have spoken of Specificks, and more particularly the excellent *Sydenham*; and altho several likewise have highly recommended the Virtues of the celebrated *Cortex*, and given admirable Directions for its Use; yet none I have met with have adventur'd (from Observations made upon its Effects) to explain its Operations: Wherefore if the

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the young Sthdent is desirous to learn what so notable a Remedy really performs in our Bodys, I must either advise him to make Observations himself, or to read what is writ of it in the *Essay concerning the Body of Man*, or

Specimen Physico-Medicum de Corp. Human. & ejus Morbis.

If we but seriously weigh the *Galenical* Doctrine of Diseases, we may soon unfold the Reason why every Age has swarm'd with *Specificks*. For it is plain, that Diseases being rank'd into Species, all Remedys that were esteem'd efficacious in particular Diseases must be *Specificks*. And if we do but impartially observe the Uncertainty in the Diagnostics, we may readily discover the true reason why the many renown'd Remedys, which have at certain times been thought very powerful Specificks, have rarely, in their Characters, surviv'd the Age in which they were discover'd or invented.

Alterative Medicines that fortify the Blood in Chronic Diseases.

4. The second Set of Medicines that exert themselves in the Blood, and are commonly administred in slow or chronic Diseases, are for the most part such as fortify and invigorate the Crasis; for such Diseases usually proceeding rather from a Weakness and Want of due Motion amongst the Parts of the Mass, than from the contrary State, seem to require such Medicines as restore or preserve the Crasis, and quicken and accelerate the Motions.

Amongst

Amongst the first of these sorts are justly to be reckon'd

- Steel, and its several Preparations, *viz.* Wines, Tinctures, Electuarys, Pills, *&c.* So likewise
- Coral, Crabs-Eyes, *&c.*
- Some fix'd Salts, as Wormwood, Tartars.
- Saffron, most Aromatics.
- Centaury, Gentian, Wormwood, *&c.*
- Species Diambræ, *&c.*
- Herbs, call'd Scorbuticks, as Scurvy-grass, Cresses; Roots, *viz.* Horse-Radish, *&c.*
- *Aq. Lumbricor. Mag.*
 Lymac. Mag.
 Raphan. comp. &c.
- *El. Proprietatis, &c.*

And a multitude of others, which may be found in the practical Authors who have treated of Diseases, under the Heads of *Cachexia*, *Leucophlegmatia*, *Febris Alba*, *Scorbutus*, &c.

Few Medicines that relax the Crasis of the Blood, in use in Chronic Diseases.

5. It does not appear there are many Medicines that relax and loosen the Mixture of the Blood which are us'd in Chronic Diseases (unless in those call'd Consumptions) which altho accompany'd with *Hectic Heats*, may fall under that Denomination; in which several Compositions and Preparations of oily, and what are call'd *Cold Seeds*, and several Decoctions and Distillations of such, and mucilaginous and sweet Substances, and likewise several Milks, are frequently us'd. But in Chro-

Except in Consumptions.

nics,

Chap. 8. nics, unattended with symptomatical Heats, such kind of Medicines are rarely exhibited. The reason of these things will be found explain'd in

Specimen Physico-Medicum de Corp. Human. & ejus Morbis.

Alterative Medicines, operating upon the Spirits, of three sorts.

6. Alterative Medicines, which immediately operate upon and effect the Spirits, may be consider'd under three kinds.

(1.) Such as exuscitate, and as it were awaken them, when they appear torpid, oppress'd, or low:

Of this kind are
- *Sp. Cor. Cer.*
- *Sal Armoniac.*
- *Sanguinis, &c.* of *Vol.*
- *Sal Vol. Oleos.*
- *Sal Succini Vol.* and all other Volatile Salts.
- *Sp. Lavendulæ,*
- *Rorismarin.* and others of these Aromatic Spirits.

(2.) Such as seem by their strong and fætid Smells, or by the powerful Emission of ungrateful Emanations, to strike and drive back the tumultuating Spirits, when they are recoiling from their proper Stations, and so returning towards the Head.

Of

Of this kind are
- *Castoreum*, either in Substance, or in several Preparations.
- *Ammoniacum*, *Assafœtida*, *Galbanum*, &c.
- *Troch. de Myrrha*, *Histeric.*
- *Ol. Succini*, *Corn. Cerv.*
- Several Juleps, compounded of *Aq. Brionæ comp.* *Pæonæ comp.* &c.
- As likewise Pills, Electuarys, variously compounded of such fætid Simples.

(3.) Such as quiet, and as it were stupify the Spirits when enrag'd or too violently mov'd:

Amongst these are numbred
- Cowslips, Lettice, &c.
- But above and instead of all, *Poppy*, or its Juice *Opium*, which is dress'd in divers Forms; amongst which are principally in use,
- *Laudan. Londinens.* and several others in the same Form.
- Liquid *Laudanum* of several sorts.
- *Syr. de Meconio*, *Papav. Rhœad.*
- *Diascordium*, &c.

The

Chap. 8. The Operations of all these sorts of Medicines are shew'd in

Specimen Physico-Medicum de Corp. Human.

What Juices to be directly affected by alterative Medicines.

7. Alterative Medicines which exert themselves immediately upon the Juices, for the Reason already assign'd, can immediately affect those only that are contain'd in the *Stomach*, *Upper Intestines*, or in the *Receptacles* or *Ductus* which are in their Passage into the Blood. And those that are to be us'd for this Intention, are such as are suppos'd to be endow'd with Qualitys, contrary to the Qualitys of such Humours or Juices as are conceiv'd to be offensive to such Parts. And since we are not indu'd with any Facultys whereby to discover the Nature, Propertys, or Qualitys of any *Juices*, *Liquors* or *Humours* that lodg or reside in any other of the before-mention'd Parts (besides what are contain'd in the Stomach, and are either generated, or remain there, and are usually perceiv'd by a sort of Sharpness or Sourness to the Tast, and a kind of broiling Heat, which rising by Intervals in Ructus, give a nauseous and nidorous Relish) therefore the Medicins in use for correcting these troublesom Humours, are of opposite Qualitys to these Tasts, and accordingly consist either of such as are contrary to, or destructive of Acidity's; or of such as by the delicacy of their Flavours overcome them.

Of

Of the first kind are those Substances which are term'd Alkalys, as
- Coral,
- Crabs-Eyes,
- Pearl,
- Crabs-Claws,
- Oyster-Shells, and others of that Tribe.

Of the second sort are
- *Sem. Carui Condit.*
- *Cardamomi,*
- *Cort. Aurant. cond.*
- *Lymon.*
- *Nuces Moschat. Cond.*
- *Tabul. Aurant.*
- *Pler. Archont. &c.*
- *Aq. Mirabilis,* Dr. *Stephen*'s, and all Cordial Waters,
- Aromatic Infusions, *&c.*

A multitude of Kinds and Forms of Medicines for this Use, may be seen under the Heads of *Affections of the Stomach,* in *Willis, Sennertus, Etmullerus, Fernelius,* &c.

8. But notwithstanding I have already observ'd, that such Substances as are apply'd to Human Bodys, either for restoring lost, or for preserving present Health (and so becoming Medicines) have nothing new added to their Natures; and of consequence being only natural Substances, must operate upon and affect Human Bodys in natural ways: and altho their Effects have been sometimes so very surprizing, and the manner of their producing them have formerly been so little understood, that the Antients have been contented with ascribing them to unaccountable Facultys, as not aspiring *What hath been prov'd.*

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spiring after any further Knowledg; yet by that it is obvious they acknowledg'd Medicines to be natural Substances, since they always explain'd their Efficacys in Methods agreeable to their Hypotheses of natural things, and writ and treated of their particular Virtues in Forms perfectly suted to their Philosophy. However, tho it has been shew'd from the Form, Structure, Situation, Connexion and Communication, as likewise from the Actions, Functions and Uses of the several Organs and Parts of a Human Body, how, and by what Organs, and in what Regions, Parts or Juices, all Medicines, as well those which procure Evacuations, as those which make Alterations, must and do perform their Operations, (from which things, if duly consider'd, it will not be very difficult to comprehend when, and which Sorts may be us'd, and what Effects are reasonably to be expected from them) And notwithstanding I have demonstrated the Insufficiency of such Hypotheses, as suppose either the Nature of the Blood, or the Powers and Efficacys of Medicines to consist in sensible Qualitys; and have also, from a Survey of the Parts of a Human Body, explain'd by what Means and Helps the Operations of Medicines are to be observ'd: And altho those things, rightly weigh'd, will furnish the young Student with such Helps as may enable him to be useful to such as are committed to his Care, without incurring the hazard of making improper or useless Applications, to the endangering the Safety of his Patient, or to the nauseating him with numbers of

loathsom

loathsom Medicines: And notwithstanding from what has been observ'd, he may easily infer, that the Benefit or Mischief of all Medicines depends on the Reasonableness or Inadvertency of their Use. *I* say, notwithstanding these things, if the young Student is not satisfy'd with such simple and naked Truths (which have only the Testimony of Sense, and the Evidence of Experience to confirm them) but is desirous to soar higher, to search into the Writings of former Ages, either to inform himself of antient Hypotheses, or to amuse others with exotic Terms or learned Authoritys; or rather to qualify himself to talk plausibly of *Apoplexys*, *Epilepsys*, *Malignant Fevers*, &c. the very Names of which carry Terror; and then is able to raise a Reputation by removing these Bugbears, in talking of the Discovery of some wonder-working Secret (which has lain neglected for Ages, but is now midwiv'd into the World by his Study) which effectually remedies these dreadful Diseases: Or rather, if he is fir'd with Zeal to know the Opinions of former Ages, whereby to qualify himself to make a judgment of these things; and yet may be under Difficultys where to begin, and what Authors to consult; therefore, as a Guide for him in these things, I have thought it not improper to lay down a Summary of their Opinions, which may serve as a Clue or Thred to conduct his Thoughts thro the Mazes and Labyrinths of Words which fill those numerous Volumes; or as a Tast whereby to judg whether the Fruit he is likely to gather from such Trees, is worthy the

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Medicines are as Relations to Human Bodys, and so are only good or bad, as justly or unjustly apply'd.

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Time and Toil he must imploy in collecting it. However, in this he is not to expect every Author's single Opinion, but what was laid down by the great *Galen*, or what was generally receiv'd by most of his Followers: and afterwards I shall refer him to some few Authors, who will more amply inform him, if he thinks fit to consult them.

A Summary of former Opinions concerning the Powers of Medicines.

9. First then he is to observe, that those Substances, which were us'd as Medicines, were formerly thought to be endu'd with several *peculiar Facultys*; which *Facultys* in Medicines carry'd a Relation either to what was call'd the *four Humours*, or to some *peculiar Parts or Regions of a Human Body* (tho this Relation was not always expres's'd) and accordingly were suppos'd either to evacuate or purge such Humours, or to correct or alter them, or someways to respect and help them; and according to these their suppos'd Operations were denominated: some Medicines, for example, were call'd *Cephalics*, others *Pectorals*, *Hepatics*, *Splenetics*, *Hysterics*, &c. others were Correctors or Purgers of *Bile*, *Melancholy*, &c. for altho some were so far honour'd as to be accounted *Specifics*, that is, were fitted for the Cure of some *Species of Diseases*; yet that Opinion was grounded on the Supposition, that the Affection of some particular *Humour or Part* constituted such a Disease.

Secondly, That Medicinal Substances were usually first divided into such as were endu'd with either *actual or potential Facultys*. By the first of which they understood such Substances as, at their very Contact of Human Bodys, did immediately manifest and exert such their Facultys. By

By the Second, they intended those Substances which did not so immediately exert the Energy of such their Facultys; but requir'd some other Help to be excited and exuscitated into it. Chap. 8.

Thirdly, That Medicinal Substances were distributed into sorts, in that they were consider'd as partaking of *manifest or occult Facultys*; by which they only understood, as their Operations or manner of affecting Human Bodys were either perform'd in a manifest or occult Method.

Medicines partaking of manifest Facultys, or such whose Effects appear'd by those Qualitys term'd Manifest, were usually branch'd into three sorts.

(1.) Such as did partake of those Qualitys, which were by the Philosophy then in Esteem call'd First, *viz. Hot, Cold, Moist, and Dry.*

Which first Qualitys were each divided into *four several Degrees*; and from a due Mixture of such Qualitys and their Degrees, the Temperature and Intemperature of such Substances arose. And the second and third Facultys, suppos'd to appertain to Medicinal Substances, were deriv'd from the several Mixtures of these first: For these first Qualitys were not singular to Substances us'd as Medicines only, but were likewise in all Bodys made and compounded of the four Elements.

(2.) Into such as were directly enrich'd with Medicinal Virtues, and esteem'd to carry an immediate respect or relation to some Faculty, Action or Function belonging to a Human Body. And these Substances were

Chap. 8. usually denominated from some Effects they were believ'd to produce upon the Organs or Parts of Human Bodys, by which such Actions or Functions were perform'd; and accordingly these Medicines were suppos'd indu'd either with *Emollient*, *Indurating*, *Condensing* or *Rarifying*, *Resolving* or *Attracting*, *Attenuating* or *Repelling*, *Astringent* or *Aperient*, *Carminative*, &c. Facultys.

(3.) Into such as were observ'd to have Facultys to produce Effects, which appear'd immediately visible to us; that is, did purge or bring out of a Human Body some foul, corrupt, useless, or excrementitious Humour or Substance. And Medicinal Substances, indu'd with these Facultys, were as numerous and different, as Nature had prepar'd Passages for the voiding or throwing out such Excrements and Filths by; or as there were suppos'd Sorts or Kinds of such Excrements or Filths produc'd or lodg'd in any Vessels prepar'd for the Passage of such Excrements. For it is most evident, they admitted that very different kinds of such Impuritys did usually pass by the same way. For example, some Medicines had Facultys of procuring Vomiting (it is true these were usually distributed into Degrees, and not into Sorts or Kinds; because the Gentleness or Violence in the Operation was more regarded, than the Nature or Difference of the Matter discharg'd) by which different Juices were evacuated. Again,

Some Medicines had a *Faculty to purge* by the Bowels, and these were distributed into Sorts or Kinds, from the Matter or Humour 'twas suppos'd they had a Faculty to bring

bring away; and from this reason some were call'd *Choler-Purgers*, others *Phlegm*, *Melancholy*, *Water-Purgers*. Some again of these had farther additional Facultys of drawing from particular Parts, as *Head*, *Liver*, *Womb*, *&c.* Again, Chap. 8.

Some Medicines had Facultys of purging by Urine, and these were divided into sorts, as suppos'd to be endow'd with particular Propertys, to expel, purge or drive out by that Passage different kinds of Substances or Humours form'd or collected there; from which the different Affections of those Parts were denominated, as *Stone*, *Gravel*, *Strangury*, *Dysury*, *Foulness*, &c. Some likewise deterged and clean'd these Parts, whilst others were suppos'd to heal, *&c.*

Some, again, were suppos'd to be endu'd with Facultys of procuring Sweat, without any other Consideration in their Effects; whilst others, in a more particular manner, had Facultys of expelling *Malignity* likewise and *Poison* that way. Again,

Some had Facultys of moving and procuring the *Menses*. Of these some remov'd what was call'd *Obstructions*, whilst others had Facultys of affecting the *Uterine Parts* in different manners. Again,

Some had Facultys of helping and procuring *Expectoration*; and for the better effecting this Evacuation, some had Facultys to *incrassate* and *thicken the Matter* to be expectorated, some to *maturate* and *ripen it*; others to *attenuate it*, that it might not adhere, but be the better rais'd.

In short, the young Student may observe that Medicines, according to the Doctrine

Chap. 8. and Opinion of former Ages, had as many Facultys, as they imagin'd manifeſt Alterations in the Temperature of the *Humours or Parts of a Human Body*, or as there were viſible Evacuations from it: for whatſoever Infirmity or Diſeaſe hapned to any *Part, Office, or Function of a Human Body*, either the Wiſdom or Credulity of former times diſcover'd ſome Subſtance which had a Faculty to remove or cure it. For ſo marvelouſly fond our Anceſtors ſeem'd to be of the Term *Faculty*, that it was the *dernier reſort* in their Enquirys concerning the Virtues of Medicines: for, as it appears from their Writings, the reſolving of all Doubts or Difficultys concerning the Efficacys of Medicines, center'd in this, that they had certain *Facultys* of performing ſuch Operations as were aſcrib'd to them.

But notwithſtanding Medicines were conſider'd as indu'd with manifeſt or occult Qualitys; yet it is moſt certain that Difference did really conſiſt more in Words, than in the Nature of the Operations of ſuch Subſtances; becauſe the Effects or Operations of Medicines, indu'd with *manifeſt Facultys*, were altogether as *occult*, as thoſe perform'd by ſuch as were ſtrictly ſo term'd. And indeed the moſt eminent Writers upon this Subject appear ſo confus'd and diſagreeing, that they ſeem not, when carefully examin'd, to be reconcilable to each other, or conſiſtent with them ſelves; being, as it ſeems to me, more delighted with the learned Words or Terms they us'd, than with the Diſcovery of ſuch Truths as they would be thought to explain.

For

For sometimes the peculiar Facultys of certain Medicines to operate upon or affect some particular Parts of a Human Body, viz. *Head*, *Breast*, *Liver*, *Spleen*, *Womb*, &c. (whether as Purgers in cleansing and drawing Impuritys from them, or as Alteratives, in bettering or relieving the singular *Facultys*, *Functions* or Uses of them) were ascrib'd to the manifest Qualitys of the Medicine; and sometimes, on the contrary, to its *Occult:* Sometimes likewise several of these were attributed to *Occult*, whilst others enjoy'd a fairer Character of being *Manifest*; when in very truth, those learned Men, who have thus labour'd darkly to explain what they could not understand themselves (in that the perpetual Circumrotation of the Blood, the Secretion of the other Juices, and the certain Uses of several other Organs were not then discover'd, the knowledg of which are intirely necessary for explaining the Operations of Medicines) must necessarily have allow'd, that if such Substances had really such Facultys, they must all have been occult, because to Human Reason incomprehensible. Chap. 8.

But to return to what our Ancestors have said of Medicines, some of which (if I mistake not) were universally by the Followers of *Galen* esteem'd Occult, altho such were as explicable as those call'd Manifest. Those that were generally believ'd to be endow'd with occult Facultys, were some *Alexipharmics*, which were thought to have peculiar Virtues to subjugate or expel particular *Malignitys or Poisons*; as likewise such things as were us'd to remove Diseases,

Chap. 8. where there was no immediate Application to the Body of the Diseas'd, whereby they might physically exert such an Energy as to produce the Effects ascrib'd to them. Of this sort are to be numbred the *Sympathetic Pouder*, *Weapon-Salves*, &c. *Amulets*, the Efficacys and Charms convey'd in *Words*, *Letters*, *Signs*, *Characters*, *Crosses*, &c. as also the *Signature of Plants*, their specific Virtues when gather'd under such Positions of the Stars, *&c.*

By this short account of the Doctrine of former Ages concerning the Facultys of Medicines, in which I have endeavour'd fairly to collect their confus'd Opinions, and to reduce them (as well as I can by reason of their Disagreements) into a narrow Compass, the young Student may perceive how little agreeable they are to modern Discoverys. However, if he is desirous to have a fuller Knowledg, or is unsatisfy'd with this Summary, as thinking such Jargon inconsistent with the Learning of former Times, which flouriſh'd for some Ages; or if he bears that Deference and Regard to those who have liv'd before him (to whom we are justly indebted for the Knowledg they have bequeath'd us, and therefore ought gratefully to own it) as to imagine they had farther Insights into the Secrets of Nature than the present Age, and that they had too much Sincerity to conceal them, and therefore resolves to search into their Writings, he may first read the several Tomes of

Galen,

Galen, in which he will find these things promiscuously dispers'd; but in a more particular manner in his Treatise

De Simpl. Medicamentor. Facultatibus.
Avicenna de Simplicibus.
Serapion Histor. Simpl. Medicamentor.
J. Sylvius de Medicamentis Simplicibus.
J. Geor. Macusii Promptuarium Materiæ Medicæ, sive Apparatus ad Praxin Medicam.
Geor. Kraut de Simplicium Virtutibus.
Gasp. Schwonekfelt Thesaurus Pharmaceut.
Jacob de Dondis Promptuarium Medicinæ.
Jacob Scheykii Tractat. Physici & Medici, de Medicament. Facultatibus, &c.
Sennertus, more especially *his Institutes*; as likewise *Fernelii Therapeutices Universalis*, and a multitude of others.

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CHAP. IX.

Diseases, Affections of Human Bodys. 2. General Words useful, but very fallacious. Few Cases, even in the most common Diseases, precisely alike, if carefully examin'd. An Instance. Individuals only exist. 3. Doctrine of particular Diseases. How form'd, and from whence deriv'd. Men busy themselves about Trifles. 4. Sickness and Health what. Number of Diseases from the Diversity of Parts. Organical and Inorganical Parts. Fluids fill the Organical Parts. Usually esteem'd as a Part of such. Contribute to their several Uses. 5. Diseases from the Fluids. Organs only Passive. Diseases seated in the Fluids. It matters not what Organs affected.

Health and Sickness what.

1. THE young Student having thus gone thro those leading Preliminarys, he is now to advance and consider what *Sickness*, or *what we term a Disease*, is, which is the Reverse, or the contrary State to what we call Health. For as the term *Health* is us'd to express that State of a Human Body, wherein all the Functions, Actions and Operations are regularly and naturally perform'd; so the term *Disease* is us'd to signify that State of a Human Body, wherein some or all of the Functions, Actions or Operations are irregularly or imperfectly executed. For tho the disorder'd State of a Human

Human Body, call'd Sickness or Disease, has usually been consider'd abstractedly, and has been divided or distributed into certain Classes or Kinds, and each of these Kinds been treated as having certain Bounds, and real and determinate Natures, by which they are distinguish'd from each other; yet really and in the nature of Things, such distinct Species of Diseases are only different Modes of Indisposition in the Parts of a Human Body, and never did, do, or will exist any otherwise than in a Body, which is their real Subject. For notwithstanding, for Example-sake, Physicians have treated of what they term either *Fever*, *Small-Pox*, *Apoplexy*, *Epilepsy*, &c. as having a real and specific Nature, and of consequence an Essence and Existence; and according to that Doctrine have *assign'd Diagnostics*, *observ'd Differences*, *and instituted Methods and Medicines*; yet, in truth, neither *Fever*, *Small-Pox*, *Apoplexy*, *Epilepsy*, &c. ever did or can exist, separated from a Human Body, which is their real Subject. It is a Human Body therefore which is the Subject of such Modes of Indispositions or Sicknesses, as are term'd Diseases, which alters and changes; and by such Alterations in the Subject, different Modes of Sickness are produc'd: for if the Subject alters, the Modes will; but the Modes cannot alter, unless the Subject upon which they depend does. Chap. 9.

General Words useful, but fallacious.

2. It is true, general Words are useful and necessary to express the common Affections of Substances; but then we deceive our selves if we imagine such Words convey the real Natures of such Substances, and so may

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may reason and conclude of the things themselves from such Words; for they are only us'd to denote the Existence of such Affections in Substances. But whether those Affections, which are signify'd by such general Terms, do really and in the same manner exist in such Subjects to which they are often apply'd, is never to be concluded from the use of such Words, but is only known by observing and comparing the different Subjects themselves. It is true, where such common Affections are of a single and simple Nature, and being obtain'd by the immediate Assistance of Sense make but one simple Idea, there perhaps Men are not so perplex'd in the signification of the Word: As for instance, in *Blue* or *Red Colours*, in *Bitter* or *Sweet Tasts*, &c. in which Men are not often misled by the Word, because they agree in the Idea. Thus, for instance, 'tis rarely disputed, whether such a Substance as Coral is Red, or whether Wormwood is Bitter. But where such Ideas as are of a complex Nature are to be signify'd, and so the Word to express them is suppos'd to include a Number or Collection of Affections; there, I say, Men frequently disagree about the Idea intended by the same Word: And for this reason Fallacys are contain'd in Generals, that is, abstract Terms; and Men always wrangle about them, in that such having no real Existency out of our Minds, we do not, or cannot perhaps, always intend the same thing by the same word, but make a different Language in it. Thus, for instance, either of the Diseases above-mention'd, signify'd by the

the words *Fever*, *Small-Pox*, *Apoplexy*, *Epilepsy*, &c. really comprizes a Number of different Affections of a Human Body; which Affections very rarely co-exist so regularly, as that such Words can precisely be apply'd to express always the same: For example, altho the *Small-Pox* seems to be a Disease wherein Physicians have as unanimously agreed, as in any one that afflicts Mankind; yet even in this well-known Disease, there rarely can be observ'd two Persons where the Symptoms are in all Circumstances exactly alike. For notwithstanding in the common Symptoms, such as the Pustles (which are usually taken for the Diagnostics) in the manner of Appearance, Maturation, *&c.* may somewhat resemble each other; yet how many other things in the Course of that Disease may and do appear very unlike and widely different in several Persons, if the different Actions, Functions, Offices and Uses of the several Parts of a Human Body are but carefully observ'd? For what Difference is there not only in the Degrees, but Times of *Heat*, of *Thirst*, of *Inquietudes*, of *Disorders* of the *Head*, *Nerves or Spirits?* What Difference in Variations of the *Pulse*, both as to *Times*, *Modes* and *Degrees?* What Difference as to the several *Separations of the Blood*, whether in the *Mouth*, *Throat*, by the *Skin*, *Urine*, *Stools?* What Disparity in the *Magnitude*, *Rising*, *Distance*, *Colour*, *Maturation*, *Decision*, &c. in the Pimples? What Unlikeness as to the *Affections of the Stomach*, as to *Nauseating*, *Pain*, *Vomiting*, *Sickness*, not only as to the Time, but Modes and Degrees, and in a multitude of other Instances

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Few Cases exactly the same, altho in the same Disease.

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stances which would be endless to observe?

For tho we are capable, in the contemplating of Substances, to divide and abstract the Affections of them, or the Modes appertaining to Beings; and tho we are capable to consider such Affections or Modes as separated, that is, without their Subject, and by neither adjoining *Time nor Place of Existency to such our Ideas of the thus abstracted Affections*, can form in our Minds *General Ideas*. And tho we are likewise capable of uniting such *abstracted Modes* or *Affections*, and by that means can constitute what we may term the *Essence of some Species of Beings*: And tho, I say, we are accustom'd to affirm, that every Substance and numerical Being, in which we can observe the Existency of such Affections or Modes, as we have united to constitute an Essence, are of such a Species, and accordingly we denominate such a Being; yet it is manifest, if we carefully and impartially consider things, that such our general Ideas of abstract Modes, which we put for the Essences of Species, never did exist except in our Understandings, in that all things which do exist are only Individuals: And therefore that there is no Standard in nature to try whether such Individuals are of such a Species any otherwise, than as we are able, by the help of our Senses, to observe whether they bear a resemblance to each other; that is, whether they partake of some Affections common to them all.

Generals never did or can exist but in our Ideas.

3. It seems to be from this Fountain that the Doctrine of Kinds of Diseases is deriv'd:

How the kinds of Diseases are form'd.

for

for Physicians, in conformity to that re- Chap. 9.
ceiv'd Practice and Doctrine of the Schools, abstracting some Affections or Modes of Indisposition observ'd in Human Bodys, and considering them as divided or separated from the Subject, do by that make them the Essence of a Species of a Disease; and accordingly whenever they observe the Appearance of such Modes as they have made the Signs of such a Disease, they affirm that Body to be sick of that Disease. And this Doctrine of general Essences being usually imbib'd, before Men apply themselves to consider or examine into Human Bodys, they come prepar'd, as persuaded of its Truth, to accommodate all things to it; and from thence to conclude, that every Indisposition has its certain and determinate Nature, and is to be reduc'd under some certain Species of Diseases.

But in that the comprehending these things, thus briefly deliver'd, may be too difficult to the young Student, and yet the understanding them be of great use in freeing his Mind from that Bias, which otherwise such generally receiv'd Doctrines will carry, I shall recommend to him

Mr. Lock's *Essay concerning Human Understanding:* Or if that seems too large, *The Abridgment of it by Mr.* Winne.

For he who designs the Practice of Physick, ought to labour with greater Application to inform himself of such things as may be of advantage in prosecuting that Art which concerns the Lives and Safety of Men, than to entangle his Thoughts with perplexing

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plexing and empty Sounds; about Words which are too complex in their Signification to be preciſely underſtood; about forming chimerical Notions, which can have no Exiſtence except in his own Brains; about acquiring the knack of talking learnedly concerning Diſeaſes, which *Men*, not *Nature* makes; about wrangling concerning the Nature of Diſeaſes, which being only Modes of Indiſpoſition in a Human Body, can never exiſt but in ſuch Subjects (as if they were *Somewhats* that had certain and ſpecifick Natures) and ſo (for it is but a natural Conſequence) enter like ſo many evil Spirits into the Bodys of Men, to impair their Healths, and deſtroy their Lives. He would not then buſy himſelf in counting his own Whimſys for Nature's Standards, nor turn and wind all Indiſpoſitions in Human Bodys, to force them to quadrate to theſe his Creatures: he would not form Arguments to prove that Nature always acts by the ſame Rules as Men have preſcrib'd for her, and that ſhe always will keep the ſame Boundarys of Diſeaſes, becauſe Phyſicians forſooth have ſet them out in determining what it is that makes each ſort: he would not labour to explain how the Modes of Subſtances do regulate and govern their Subjects, when it is moſt evident ſuch Modes are only produc'd by the Subject, and cannot exiſt but in it: And all theſe things are plain Deductions from the Doctrine of general and ſpecifick Natures.

Sickneſs and Health the Reverſe to each other.

4. Sickneſs and Health are like *Caſtor* and *Pollux* in a Human Body; for when one is preſent, the other is abſent. Health is the Perfection,

Perfection, Sickness the Infirmity of Human Nature: for as *Health is only the just Harmony, Temperature and Agreement* of the several Parts, jointly cooperating for the common Benefit of the whole Body; so *Sickness is the Discord, Intemperature or Disagreement* amongst some or all the Parts, by which they are obstructed in their jointly co-operating for the performance of such Functions as appertain to the whole. And as Sickness therefore, or Diseases, are formed from the Vice or Fault, Infirmity or Imperfection of some or all the Parts of a Human Body, by which they are made uncapable of performing their regular Offices; so it is plain there may be as great a Diversity and Number of Diseases as there are Parts imploy'd in such Offices. But because the several constituent Parts of a Human Body have already been reduc'd under two general Heads, *viz. Organical Containing*, or *Consistent*, and *Inorganical Contain'd*, or *Fluid*; I shall, for method sake, consider them under those two Heads. Chap. 9.

The Functions of a Human Body not to be alter'd, but the Organ must; nor the Organ, but from the Fluids.

It is difficult to conceive how the Actions or Functions of a Human Body can be perverted or alter'd, unless the Organical Parts are someways affected, by reason such Parts are the proper and immediate Instruments by which the appearing Actions and Functions are perform'd. And it is likewise as difficult to apprehend how the Organs can be internally disorder'd or injur'd, except by the means of the Fluids which insinuate and pervade them; because the Particles of Matter constituting the Organical Parts, must necessarily be united, and

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mutually adhere to each other (for without these there could be neither Consistency nor Firmness) and consequently can not be disjoin'd or sever'd to undergo any Change, unless by the force or means of some moving Body to effect it.

Fluids constitute a great part of some Organical Parts.

To comprehend these things, it will be necessary to consider, that notwithstanding the largest bulk of a Human Body seems to consist of firm and consistent Parts, yet really a large proportion of those very Organical Parts are Fluids; for the Fluids being contain'd in the Consistent, are not usually distinguish'd, so long as the Organs remain intire. Thus, for example, altho the consistent Parts of a Muscle are really only the carnous and tendinous Fibres, Membranes, Blood-Vessels, *&c.* yet the Blood which fills all the Interstices and Vacuitys, and so makes a large part of that Organ, is not distinguish'd from the others, all being taken as constituting the Muscle: And how great a part of such Organs are made by the Fluids, will readily appear by the weight, whensoever the Muscle is intirely freed of them; for then the weight will be so lessen'd, as plainly to shew how great share they had in it. The same may be observ'd of the glandulous, paronchimous and membraneous Substances, and likewise of the very Bones, whose Pores are fill'd with such large Quantitys of Fluids, as make a mighty Difference in the weight between sucvulent and dry Bones.

From this reason, altho the Organical Parts do frequently appear diseas'd, yet such

such their Faults, Infirmitys or Diseases proceed from, and are founded in, those Parts contain'd in them which are Fluids; because the adhering and consistent Parts are incapable, from the Firmness and Fixedness of their Natures, to be alter'd or injur'd unless by some Violence; which Violence, if internal, must be from the Fluids, in that they only move and change their Places: And the Fluids are capable of effecting this, by reason they have so great a part in performing the Offices and Functions of such Organs. For tho, according to the most receiv'd Opinion, and even to Sense it self, the Muscles are the Instruments which move the Members; yet really it is the nimble Spirits which move the Muscles, and the circulating Blood which adds Weight and Strength to that Motion. However, in that the Organical and Consistent Parts are by Nature fix'd in certain Seats, where they have divers Relations to the vicinous Parts, and from whence they cannot depart or remove; and being likewise by Nature excluded from all Communication with other Substances, and so can neither receive nor dismiss any Parts, but as they are either brought to, or carry'd from them by the means of the moving Fluids, which for this purpose incessantly visit and glide thro their very Substances, and which in truth make so great a part of their Weight and Bulk: wherefore all the Vices or Faults, Disorders or Infirmitys of these thus fix'd and consistent Parts, so far as they either relate to their Cause or Beginning, to their Growth or Increase, to their Removal or their Cure,

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Organs, altho they appear alter'd, yet it is for the most part the Fluid contain'd in them.

Organical Parts nourish'd, wasted, &c. by the Fluids.

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are perfectly to be consider'd, as deriv'd from, and founded in the Fluids. Furthermore, tho the Continuity of a firm and consistent Part may be broke or dissolv'd by outward Violence; yet the curing of that *Solutio Continui*, if internally attempted by Physick, can be effected no otherwise than by the Fluids.

Diseases, tho apply'd to a Part, are really in the Fluid.

5. It is from this reason, that tho there may be said to be as many Diseases as there are Parts of a Human Body, or as there can be Disorders or Irregularitys in the Functions and Offices of such Parts; yet really all such Diseases are deriv'd or occasion'd by the Fluids.

Organical Parts only Passive.

It is from the same reason, that tho the Infirmitys or Disorders, which are term'd Diseases, are discover'd by some Vices or Irregularitys in the Offices and Functions of the Organs, in that the Fluids are contain'd and included in such; yet really the Organs are impair'd or injur'd by the Fluids, and cannot be better'd or repair'd but by them: besides, the Organs themselves, altho the visible Instruments in performing such Offices or Functions, in truth are only passive in such, as having no Motion but what is communicated to them by the Fluids.

Of no moment to inquire what Region of the Body affected; since it is only the moving Fluid which is primarily affected.

It is from these reasons the young Student needs not be very solicitous in inquiring in what *Region, Organ or Part* Diseases are seated, notwithstanding the former Authoritys of learned Men (unless as such require any local Applications, which is merely Chirurgical) since all he can internally do for the Relief of such Parts is only by the Fluids. For as they must

receive

receive his Medicines, so they must convey them; and the Blood, which is the Fluid that does this, being incessantly whirl'd about in Circulation, must necessarily disperse the Parts of Medicines equally to all Parts of the Body, in proportion to the amplitude of the Vessels thro which it passes. And this Consideration plainly demonstrates the Vanity of former Opinions, in allowing *peculiar Facultys in Medicines* to respect *particular Parts:* For if we admit the Circulation of the Blood (which is a Fact too evident to be deny'd) and that the Chile or Juices receiv'd from what we eat and drink are convey'd into the Blood, which the Anatomy of those Parts plainly shews, and Experiments confirm; we must conclude that what is receiv'd from the Stomach into the Blood must be mingled with the Blood, and equally whirl'd abont in Circulation with that, and of consequence can no more affect one Part than another.

The Absurdity of Medicines having a particular Virtue to relieve this or that Part of the Body.

But if the young Student is desirous to be thorowly inform'd of the Nature of Fluidity, that so he may be the better inabled rightly to distinguish between that and Firmness or Consistency, he may read

Boyle *of Fluidity and Firmness.* And
Specimen Physico-Medicum de Corp. Human. & ejus Morbis.

CHAP. X.

For the better understanding the Nature of Diseases, the Uses of the several Fluids are to be observ'd. 2. *Three general sorts of Fluids, Blood, Spirits, and Appropriate Juices. All Parts of a Human Body, as well Fluids as Consistent Parts, co-operate for the Good of the Whole.* 3. *Uses of the Blood. To learn those, the Blood to be consider'd whilst it is a Part of a living Human Body. What the Propertys are in that State. What requir'd to continue the Blood in a natural State in a Human Body. Diseases from Vices, or Defects in these. Instances in each.* 4. *Spirits. Their Uses. The Offices of the Spirits founded in their Motions. Sensation and Organical Motion.* 5. *Appropriate Juices. Their Uses. Diseases from them.* 6. *Diseases multiply. From what Reasons. All proceed from the Fluids.* 7. *How to judg of Diseases.* 8. *These Things, altho obvious Truths, yet not observ'd. Prejudices from the Peripatetic Doctrine not remov'd.* 9. *A Summary of the Opinions of former times concerning Diseases.* 10. *Another Sect of Physicians that differ'd in Principles from the* Galenists, *Chymists.* 11. *New Hypotheses but Branches or Graftings upon those former.*

1. HAVING thus observ'd and demonstrated, that all the Infirmitys or Diseases of the Organical and Consistent Parts

Parts are not only occasion'd and form'd by the Fluids, but are also to be remedy'd and cur'd by them; I shall now proceed to observe how the fluid or inorganical Parts are affected or diseas'd. Chap. 10.

Diseases being founded in the Fluids, to form an Idea of them, necessary to know the Offices and Uses of the Fluids.

It is manifest, from what has already been remark'd concerning the general Nature of what we term a Disease, that as the Fluids or Juices have their proper Offices and Uses in the Oeconomy of the Body, which, when they are regularly and naturally perform'd, is in a *healthful and natural State*; so when such Fluids decline or fail in such their Offices and Uses, they are in *a diseas'd or unhealthful State*. To comprehend then the Nature of the Diseases of the *Fluids*, that is, the preternatural State of them, it will be necessary first to examine into their natural Uses, because these different States being the Reverse to each other, the latter is not to be understood without some Knowledg of the former.

Three sorts of Fluids.

2. The large Number and great Variety of Fluids, which may be observ'd in a Human Body, do render it difficult, and would in truth make it appear tedious to the young Student to treat severally of each of them: Besides, it does not seem necessary for our present purpose severally to explain the Uses of them; it being sufficient that they are reduc'd into Classes, *viz. Blood, Spirits, and separate Juices.*

The other Fluids being made out of the Blood, necessary to consider the Blood first.

The Blood, altho only nam'd as one amongst the rest, yet is really the common Fountain, out of whose Streams the Spirits are prepar'd, and all the separate Juices produc'd: And being thus the Source from

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whence both Spirits and other Juices are deriv'd, it is plain, altho either Spirits or Juices may be diseas'd, yet neither can be mended or alter'd but by the Blood. Wherefore it will nearly concern all who are Votarys to the Art of Physick, carefully to observe the Uses of that scarlet Liquor, that so they may the better comprehend the Vices and Faults of it, in that it is the Fountain from whence the greatest Number of Diseases are deriv'd, and the Medium by which most of them are to be cur'd.

All Parts of a Human Body co-operating for the whole, when a Part is disorder'd, the Whole must.

It has already been noted, that the several Parts of a Human Body have not only a Difference in their Form, Structure and Texture, but in their Offices and Uses also; and notwithstanding the Diversity of such Parts, yet being all united into one Body, and so constituting one *Individuum*, they all jointly co-operate in the performance of such Actions and Functions as appertain to the Nature of such a Being, as all such Parts jointly taken constitute. And therefore whensoever any one of these united Parts fail in their Offices or Dutys, the whole *Individuum* in some measure becomes disorder'd; for tho all the Parts of a Human Body are not equally concern'd in the continuance of the Life of the Whole, yet every Part contributes to some Uses which belong to the Whole.

The Offices of the Blood.

3. The Blood is a large and noble part of a Human Body: for it not only continually travels thro every Region of that animated Being, but also powerfully contributes to the Office and Use of every part of it; it warms and cherishes the remotest Regions of this Human

Human Fabrick; it repairs the Ruins, and nouriſhes the weary'd and waſted Members; it brings Materials to relieve their Wants, and ſupply all their Conſumptions; it continues a Life in them, and preſerves an Union amongſt them; it is aſſiſtant to their Motions, for, like a Weight to a Clock, the Movers cannot ſtir without it; neither will Senſe continue, where this ſcarlet Gore does not viſit: for notwithſtanding both *Senſe and Organical Motion* may be loſt in thoſe Regions where the Blood continues to circulate, yet neither will continue where it does not run. Chap. 10.

Blood alter'd, the Body will be diſeas'd.

The Blood then being of this wonderful Uſe, that no Parts of a Human Body can perform their proper Offices without its powerful Aſſiſtance, it muſt neceſſarily follow, that whenever it is alter'd or chang'd, every Member muſt naturally decline in its Uſe.

The Uſes of the Blood alter'd, the Nature muſt.

And as the Blood is thus by Nature deſtin'd for ſeveral Uſes in a Human Body, ſo likewiſe it is endow'd with ſome proper and determinate Nature, whereby it may be fitted to perform thoſe its Offices: And whenever its proper Nature is alter'd or injur'd, it muſt become uncapable of ſuch its former Performances; for its Uſes proceeding from its Nature, 'tis evident, its Nature being chang'd, its Uſes muſt: For tho the Vices or Faults of its Nature can only appear by the Defects or Irregularitys of its Offices; yet there could be neither Defects nor Irregularitys in its Offices, were there no Vices or Faults in its Nature; the latter being but the neceſſary Effect of the former.

In

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To discover the Nature of the Blood, we must consider it as a Part of a living Human Body.

In order to obtain any Certainty concerning the Nature of the Blood, from whose good Disposition its proper Uses proceed, we must carry our Enquirys to the Blood it self, whilst it remains in that very State in which all its Offices are perform'd; for when once remov'd out of that, altho we continue the name of Blood to it, yet it is plain, as its Condition so its Propertys are chang'd: for example, it then neither runs forward in its proper Conduits, nor does it separate or yield any appropriate Juices, nor receive any Additions of fresh Parts, neither doth its Crasis or Heat remain. And for this reason we must only examine into it, whilst it continues a Part or Portion of a *living Body*; for when once it is out of that State, it becomes stript of several Propertys which then belong'd to it. And if we inquire into the Nature of the Blood, as 'tis a part of a *living Human Body*, we may observe that it is a Fluid, compounded and made up of very different Parts; and that its Qualitys, such as *Colour*, *Tast*, *Consistency*, *&c.* proceed, as they do in all other Substances, from the Figures, Modifications, and Positions of its minute and component Parts; that it's perpetually moving forward in its proper Conduits, that it continually wasts by divers ways, and that it daily receives Supplys to make good what it continually loses, and so remains in a perpetual Motion, and in a continu'd Flux or Change of Parts. These Propertys we may observe always appertain to it, so long as it continues a part of a *living Human Body*; and so long only such Vices or Faults belong

to

to it, which are denominated Diseases. Wherefore that the Blood may continue in such a State, that all the Functions and Offices may be regularly and naturally perform'd, these three things seem intirely necessary. Chap. 10.

That the Blood may regularly perform its Offices, three things are requir'd.

1*st*. A constant Accession of fresh Parts into it.

2*ly*. A continu'd Recession of Parts from it.

3*ly*. An uninterrupted and equal Circulation thro the whole Body.

And whensoever therefore any Defect or Irregularity arises in the performance of any of these three things, it is plain its genuine Nature must be chang'd, because these things are then essential to it; and therefore from any Defect in these the Blood must be rendred uncapable of regularly performing those Actions and Offices which properly appertain to it: And then the other Parts of the Body being thus defrauded of the Assistance they should receive from the Blood, must really want what is necessary for the orderly performance of their natural Functions; and those failing, the Body is reduc'd into that State which is term'd Sickness. For,

(1.) If the Blood daily wasts by the means of the secretory Vessels, and receives no additions of fresh Parts to supply such Consumptions, its Quantity must so lessen as to become too little for its natural Uses: from whence a multitude of Infirmitys, respecting all Parts of the Body, must necessarily arise; *viz.* the Animal Functions, for want of Spirits, must decline; the Muscles must impair in their Strength and Use for want of

Nourishment

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Nourishment and Weight to add Force to their Motions; the several appropriate Juices prepar'd out of the Blood, which are intirely necessary for preserving the Health of the Body, must soon dry up and fail, in that the Fountain will not emit Streams to feed them. And from some or all of these Reasons, a multitude of Infirmitys, which have been by learned Pens treated as particular Diseases, are deriv'd.

This want of Accession of new Juices into the Blood, does not so often proceed from any want of Materials for the making such (for that rarely happens in *Europe*, there being few of Human Race so miserable in their Circumstances as not to obtain the Necessarys of Life) as from some Deficiency in the conveyance of such Juices into the Blood; which happens either from a want of Appetite for taking things which prepare them, or from some Defect or Infirmity in the Stomach or Bowels, in retaining and fitting such to be convey'd into the Blood, or from some hindrance to the Passage in the several Vessels afterwards.

(2.) If the Blood does not waste its Parts in some proportion to the Quantity it receives, it must necessarily so far increase as to exceed the Capacity of its Vessels; and so the whole Body must be overwhelm'd with a general Inundation, by which means a multitude of Mischiefs and Diseases must be created: for all the Organs of the Body being loaded and overspread with this crimson Deluge, must be rendred unable to move, act or operate.

(3.) If

(3.) If the Circulation of the Blood is any ways perverted, all its Offices and Uses must be chang'd: for if it moves too rapidly in its Conduits, it will pervade the small and tender Vessels with too much Violence, and so force them to divide or extend; from whence proceed Inflammations, Phlegmons, *&c.* which, according to the Parts they affect, are variously treated as particular Diseases; as likewise Hæmorrages, *&c.* If it moves too slow in its Circulation, its constituent Parts are apt to break and divide, some stopping or lodging in the meandring Straits thro which it must pass; from whence arise œdematous Swellings, *&c.* whilst others insinuate and creep out by common Passages, and so too much inlarge Secretions there. And from the same reason some Parts or Regions of the Body must waste, in that the Blood, from a defect of Motion, cannot ascend to them, whilst others disproportionably increase from the same reason.

It is plain, from a just consideration of that Substance we call Blood (so long I intend as it continues a part of a living Human Body, and so long only it is the Subject of a Physician's Care) that all the Alterations which can arise in it, must originally proceed from the Defect or Fault of some one or more of those three its Essential Propertys; because as it is a part of a living Human Body, and so contributes to the Life, Use and Motion of the several Parts, it evidently requires the Continuation of those; and whensoever either of those is intirely abolish'd, all the Offices, Functions and Operations

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rations perform'd by the Blood, or flowing from it, gradually ceaſe, and Life it ſelf fails.

Spirits the Inſtruments of Senſation and Organical Motion.

4. The ſecond Claſſis into which we have rank'd the Fluids of a Human Body, are the Spirits. What we call the Spirits is that ſubtle Fluid that paſſes in the Nerves, which altho prepar'd out of the common Maſs of Blood, yet are deſtin'd to far nobler Uſes than that Liquor out of which they are extracted; for it is by the Powers of theſe nimble Miniſters, that Animated are diſtinguiſh'd from Not-animated Beings: For theſe Spirits are made the Inſtruments for conveying *Senſe*, and for communicating *Organical Motion* (and Life is only apply'd to ſignify that State of Subſtances where ſuch Propertys are obſerv'd.) And accordingly whenever any part of a Human Body is depriv'd of the kind Influence of theſe vivificating Rays, which dart down from the Brain thro the Nerves to actuate them, that Part is immediately rendred a ſenſleſs, motionleſs and uſeleſs Lump.

Nature of the Spirits diſcover'd by their Operations.

The Nature of that Fluid which darts thro the Conduits of the Nerves, which we term Spirits, is no otherwiſe diſcover'd to us, than that its Efficacys and Operations are manifeſted in certain Degrees and Modes of Motion, *viz.* in *Senſation*, in which their Motions are inward, that is, from the Organ to the Brain; and in Organical Motion, which is from the Brain to the Organ. And therefore their Diſeaſes, that is, their Infirmitys and Irregularitys, are only diſcover'd by ſome Diſorder or Failure in thoſe their Functions, that is, in

Spirits have two ſorts of Motion.

ſuch

such their Modes, Determinations or Degrees of Motion; and such their Disorders, which really make their Diseases, may be occasion'd or proceed either from a Deficiency in them, or from a Redundancy of them, or from some Vice or Depravity in their Natures: And Variety of Diseases, which have been learnedly treated by several eminent Men, are deriv'd from each of these; for from the first, *Faintings*, *Swoonings*, *Loss of Strength*, &c. do often proceed; from the second, *Rages* and *Violences of Mind*, *inordinate Motions*, &c. from the last, a Mixture of all. Chap. 10.

The third Classis of Fluids are the Appropriate Juices.

Separate Juices of two sorts, useful and superfluous.

5. These appropriate Juices may be consider'd as of two sorts, *viz.* either such as are Useful, which are again return'd into the Blood, altho, according to their several Offices and Natures, by very different ways: Or such as are Excrementitious, that is, discharg'd the Body, in that their farther Continuance in it is of neither Use nor Advantage to it.

Both these sorts of Juices are equally separated from the Blood, and seem to receive their particular Forms from their manner of Secretion: However, both have their Uses; the first positively, in that they cooperate in preserving the Health of the whole; for some of the Parts of the Body would soon decline in their Operations, were they rob'd of the Accession of these Juices, as manifestly appears from a failure in the Descent of the *Bile*, in the Offices of the *Stomach and Bowels*, as likewise from a Deficiency

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ciency in the *Saliva*. The other of these negatively; for if these useless Juices are not discharg'd, the Oeconomy of the Parts will be destroy'd by them.

From the Vices and Faults of these Juices, several of those Diseases which have formerly been treated, as being deriv'd from Obstructions, do proceed; and likewise several of those denominated from Tumors.

Diseases arising from some Fault or Defect in the Parts of the Body in performing their Offices, there may be as many Diseases as Parts.

6. By what has been observ'd concerning the Nature and Uses of the different Parts of a Human Body, it is manifest, that Diseases are really founded in some Faults or Imperfections of the *constituent Parts*, by which I understand not only the *Organical*, but also the *Inorganical Parts*; by which they are rendred uncapable of performing their regular and natural Operations: And that therefore there may be as many sorts of Diseases, as there are number of Parts, or Diversity of Uses or Functions appertaining to each of such Parts. But in that all the Motions and Operations perform'd among the Parts of a living Human Body, are begun, continu'd and executed by the means of some of the Fluids; the Organical or Consistent Parts having no powers of themselves to move, operate or act, but as they are actuated and mov'd by the subtle and nimble Fluids (the Muscles themselves, and all that are esteem'd the moving Parts, being only a lifeless and motionless Lump, till enliven'd and invigorated by them) therefore all Diseases are properly founded in some of the Fluids, *viz.* Blood, Spirits, or appropriate Juices; there being in truth nothing else in a Human Body from whence they

they can be deriv'd: And all those numerous Catalogues of Diseases, which have been learnedly treated by ingenious Men, and consider'd by the Doctrine of the Schools, as partaking of *certain and common Natures*, and as such having their *just Boundarys* and *Pathognomonic Signs*, by which they were to be distinguish'd and nam'd, and from which they were to be treated by certain Methods and Rules; are nothing in Human Bodys but some *Vices or Faults in the component Parts*, by which they are rendred uncapable of performing their several Offices, and are all originally founded in the Fluids. For notwithstanding the Organical or Consistent Parts do often seem diseas'd; yet those their Diseases are not founded in such *Portions or Parts of such Organs or Members* as are truly and indeed *consistent* (which are, as has been already observ'd, what is properly the Organ) but are founded in *such Parts as are contain'd in the Organ*; which tho taken as part of the Organ, yet really do not unite nor cohere to it. And so tho such fluid Parts add nothing to the Strength of the Organ when separated from the rest of the Body, yet they do to the Use and Strength of it whilst it remains a part of the Body; for which reason, altho the Organ may appear diseas'd, yet that Disease is effected in the Organ, by the means of the *fluid or contain'd Parts*. Chap. 10.

7. In order to form then a just Idea of Diseases, we must observe and consider the several Faults and Disorders of the Fluids, that is, how they swerve and decline from a natural to a preternatural State: We must observe, *The Disorders of the Fluids, which are Diseases, not to be understood, unless their Offices are known.*

Chap. 10. obſerve, by the common Index the Pulſe, how the circular Motion of the Blood is alter'd; we muſt obſerve from the ſeveral excreted Juices, *viz.* thoſe flowing in the Mouth, the Urine, the Sweats, thoſe that deſcend by the Anus, and any others which can fall under our Examination, how the *Secretions* are alter'd or chang'd: and by a due weighing and comparing theſe, we may judg of the Nature of the Diſeaſe, and the Methods by which they are to be remov'd. For the Offices and Uſes of the Blood, as they regard the ſeveral Parts of a Human Body, being founded in the very Nature of that ſcarlet Liquor; and the progreſſive Motion or Circulation, and the continual Separation by the ſecretory Veſſels, being inſeparable from the Nature of it ſo long as it remains a part of a living Human Body; it is therefore obvious that a Change obſerv'd in any of thoſe muſt plainly denote an Alteration in its Nature, ſo long as it continues in that State. And as theſe only fall under the immediate cognizance of our Facultys, ſo theſe only can direct us in forming Ideas of the Nature of Diſeaſes; and therefore it is to theſe alone we ſhould have recourſe, to diſtinguiſh, and cure them, and not to any general Images painted out in Authors, of certain kinds of Diſeaſes which have bounded and determinate Natures: and ſo tho they appear different in divers Bodys, yet they are ſtill to be treated in the ſame Methods.

8. Theſe things, altho plain and eaſy Truths, as being only Deductions from clear Teſtimonys of Senſe, and agreeable to what, for

for Evidence and Certainty, is now universally allow'd, *viz.* the Circulation of the Blood, the Variety of Secretions, the Motion of the *Lympha*, and several such like Anatomical Discoverys; yet being founded in Relations, which are not so easily apprehended, they seem not to have been much regarded, or well observ'd. Besides, most of the antient Physicians having espous'd the *Peripatetic Doctrines*, have rais'd their Medical Systems upon the footing of that Philosophy, by which means several Opinions have been introduc'd manifestly inconsistent with Truth; and some of those Opinions remaining (as I have already shew'd) has been the probable occasion why the old Forms of treating of Diseases, and the old Methods of remedying them, have not been discontinu'd. For notwithstanding some ingenious Men have somewhat chang'd the former Theorys; yet, which seems wonderful, they have not departed from the Forms of writing of certain kinds of Diseases; nor have they, in many Instances, declin'd from the old Methods of Cure: Notwithstanding it must be acknowledg'd, that whosoever acts faithfully in practice, ought to accommodate his Measures to his Hypothesis, be it true or false in it self; because he is persuaded of the Truth, or otherwise must own himself insincere. And these things being so, it may not perhaps be an unprofitable Work to draw out for the young Student a short account of such receiv'd Opinions, that so he may tast whether the Fruit to be gather'd from such decaying Trees, may be worthy his toil to collect it.

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The Antients suited their Doctrines of Diseases to the Peripatetic Philosophy

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Physicians agree not always in their Doctrines.

9. But this I must premise to the young Student, that I do not pretend to give him the full sense in every Circumstance of such practical Writers (but only the Summary of what was common to most of them) for that would be to nauseate and even surfeit his Stomach, by entertaining him with such an *Olio of Opinions*, which by reason of their Number and Diversity could not be serv'd up, nor plac'd in so narrow Compass, as a brief Abstract requires; but only to offer him a Tast of the Fruit of this plentiful *Canaan*, that thereby he may either be invited to enter himself into those large and learned Regions; or, if the Relish of what is thus serv'd up, is neither pleasing nor grateful, that he need not toil away his Hours in the pursuit of what he does not like.

Most of them Followers of Galen.

And for this purpose therefore I shall only regale him with a Mess made out of such Ingredients as seem to have been receiv'd and us'd by most of them; for notwithstanding their Disagreements in some Circumstances and Methods about particular Diseases, yet most of them being Followers of *Galen*, they have implicitly agreed to what their great Master laid down as *Principles* or *Truths* in this Divine Art.

A Summary of the Galenical *Doctrine.*

For they seem unanimously to have consented to the *Aristotelian Doctrine* of all Substances being form'd out of the four Elements, *viz. Fire*, *Air*, *Earth*, and *Water*; and that their Actions, Facultys and Powers proceeded from the four first Qualitys, viz. *Hot*, *Cold*, *Moist*, and *Dry*: That a Human Body was compounded of the four Elementary

Elementary Humours, *viz. Blood, Phlegm,* Chap. 10.
Bile Yellow, and *Black*; that there were *three principal Parts* which had the Prerogative to preside as it were, and influence the whole Body; all the other Parts being vivificated or cherish'd from these; and these were the *Brain, which was the Seat of Sense and Motion,* &c. which, by the help of the Nerves, communicated with all the Regions of the Body: The *Heart, which was the Seat of Life,* and by the means of the Arterys sent vital Blood to every Member: The *Liver, from whence the Veins were deriv'd,* which prepar'd Blood for the whole Body. That the Parts of a Human Body were endu'd with *four common Facultys,* viz. *A Faculty of Attraction,* by which they drew Nourishment, and such things as were of use to them; *a Faculty of Retention,* by virtue of which they preserv'd and kept what they had by the first Faculty obtain'd; *a Faculty of Alteration,* by the power of which they alter'd and converted what they had receiv'd and retain'd into such Uses as they were destin'd to: and lastly, *a Faculty of Expulsion,* by which they drove out or remov'd from them whatsoever was useless or hurtful.

Besides these *four common Facultys,* each Part had its *proper Faculty,* by virtue of which such Actions or Operations were perform'd as were strictly suppos'd to appertain to its Nature: for by the means of this, *the Spleen,* for example, collected what was call'd *Melancholy,* or *Bilis Atra*; the *Liver, Bilis Flava*; the *Reins* or *Kidneys, Urine,* &c.

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The common Temperament of the whole Body arose from the Mixture of the four Elementary Humours; and according as either of these prevail'd, and got dominion above the others, the Temper of the whole chang'd to be either *Sanguine*, *Bilious*, *Phlegmatic* or *Melancholy*; and the Happiness and Excellency of Temper depended upon a just and due Mixture of these.

The Temperament of the several Parts proceeded from a due Mixture of the four first Qualitys in proportion, according to their different Natures and Uses.

And as they explain'd by these Principles the Natures, Offices and Uses of the several Parts of a Human Body; so likewise they made use of the same, in their accounting for and explicating the Nature of Diseases.

For First, in their treating of Diseases, they divided them, as they did the Parts of a Human Body, into two sorts, *viz.* into *Similar and Organical.*

Diseases of the first kind were suppos'd to proceed from what they call'd *Intemperies*; by which was understood a Prevalency or Dominion of some one or more of the first Qualitys (in a degree beyond what the Nature of the affected Part did admit) above the others. And these kind of Diseases were consider'd as either *Simple or Compound:* for if one Quality only prevail'd, they were esteem'd Simple; but if more, then Compound.

The acute and learned *Fernelius* observing the Deficiency of these two Kinds, in answering to the Affections of the similar Parts, introduc'd

introduc'd a third sort of Diseases, which he terms, *Morbi totius Substantiæ, sive Occultarum Qualitatum*; because he suppos'd in these somewhat was immediately added to the Part, by which such Diseases were produc'd, which were not to be deriv'd from an *Intemperies* only of such Parts. Chap. 10

Diseases of the second sort, which were call'd Organical, were believ'd to proceed from some Fault, Defect or Infirmity of the Organ; and these were distinguish'd into sorts, according as the Organs were suppos'd affected, either as to their Conformation, Figure, or Structure, or as to their Bulk or Magnitude, or as to their Number, or Situations.

Besides these two general sorts of Diseases, which were thus answerable to the Parts of a Human Body, there was likewise a third Kind produc'd, which was common to both the Parts, from whence the two former were denominated; and these were *Morbi solutæ Unitatis*, in that the Parts which were term'd *Similar*, as well as those call'd Organical, were incident to this Infirmity.

Besides the Diseases that were thus consider'd under these general sorts, as they were founded in, or bear a relation to what was esteem'd the constituent Parts of a Human Body; for the Blood, and what they call'd the Humours (under which Term the Blood was sometimes compris'd, and sometimes not) were not properly esteem'd constituent Parts of the Body, but only as somewhat included and contain'd in the Body; there were other Diseases, which be-

Chap. 10. ing diffus'd thro the whole Body, were not to be directly deriv'd from any one part of it; and therefore were believ'd to proceed from some *Intemperies* in these, *viz.* Blood and Humours: and the proper Natures of these Humours being made by the first Qualitys, for each of them had its Mixture of such (altho not all in the same proportion) for that vary'd according to their different Natures, Uses, *&c.* what was but an *Intemperies* in other Parts of the Body, was a Plenitude, or rather a Redundancy of Humours here: and if this appear'd in the Blood, it was strictly term'd a *Plethora*; but if in the other Humours, oftentimes a *Cacochymia*. But the mighty Differences that occur in their Writings, in the handling this Point, render it somewhat difficult so to unravel their meanings, as to reduce them into any certain Form: for by some, what is call'd a *Plethora*, was only allow'd to be a redundancy in Quantity; and by these there are usually numbred *four Humours*, exclusive to the Blood; for which reason, notwithstanding the Quantity of the Blood was increas'd, yet the Nature was not vitiated by the Prevalency of any one Quality above the others. Whereas by others the Blood was accounted as one of the four Humours (for that Number is too sacred amongst the *Peripatetics* to be abandon'd) and then, according to that Doctrine, the *Plethora* must proceed from an *Intemperies*; because the Blood acquiring too large a power above the other Humours, the proportion of the first Qualitys, which appertain to its Nature, were necessarily increas'd in proportion to its

its Quantity; and so would exceed those Qualitys that should, according to the Rules of Nature, be in certain proportions in the other Humours. However, what they termed a *Cacochymia* arose from some Error in the Qualitys of the other Humours; for when one of these prevail'd, it soon became too redundant. And indeed it seems most agreeable to these Doctrines, to own that even a *Plethora* does originally proceed from some *Intemperies* in the Blood, in that the due proportion of the first Qualitys being increas'd beyond those of the other Humours, its Quantity must necessarily become too redundant for the other. Chap. 10.

But notwithstanding the Physicians, before the last Century, generally submitted to the Doctrine and Precepts of their great Master *Galen*, who in all things accommodated his System to Peripatetic Principles; and tho the Vanity of that Philosophy has been abundantly demonstrated, and the Doctrines of the great *Galen* concerning the four Humours, particular Facultys, *&c.* by the Discovery of the Circulation of the Blood, *&c.* has been sufficiently exploded; yet notwithstanding such late Improvements in things, as regard both Philosophy and Physick, a multitude of Advantages have not hitherto been observ'd to proceed from them, either to fortify Mens Bodys against the Insults of Diseases, or to deliver them from the Dangers and Sufferings of such, when seiz'd with them. The probable reason why the Advantages in the Practice of Physick have not, by these Discoverys, been farther improv'd, may consist, in that the Errors

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rors and Imperfections of that Art have, in some measure, proceeded and been cherish'd by that learned Usage of accommodating things in it to the speculative and scholastical Form of Categorys; as well as from the raising their Systems upon false and precarious Principles. For that Usage of treating of Diseases has insensibly led Men to consider the Infirmitys of Human Bodys, as things endu'd with certain and specifick Natures; which appears in that, agreeable to that Doctrine, they have learnedly set the Boundarys, and assign'd the Characters and Marks by which the several Species are to be known, and ascertain'd the Methods and Medicines by which they are to be remedy'd or remov'd. It is true, wanting certain Standards for these their Proceedings in Nature, they sometimes appear perplex'd in ranking them into Classes; because they cannot always agree by what Marks or Signs the Species are to be known: And from that reason do often dispute about the Kind of them, notwithstanding they unanimously consent that there are such. And therefore whenever such unusual Indispositions are observ'd as cannot, by reason of the strangeness of the Symptoms, be well reduc'd into any known kind of Diseases, such are (because they will not depart from the receiv'd Mode) either call'd new Diseases, and so have new Denominations given them; or otherwise are esteem'd Complications of old Ones.

For learned Men have so strictly in their Systems bound Nature up to their Forms, that they will not permit her in any of her

Proceedings

Proceedings to swerve from them: they will not even vouchsafe her that freedom as to act in her own way; but will prescribe her Bounds she must not exceed, and Rules she must not transgress. And if sometimes she appears refractory in producing Sicknesses, which will not like *Tallies* exactly fit their Descriptions; then, in favour of their own Doctrines, they either affirm she grows fruitful, and brings forth two or more Diseases in the place of one, or else that she produces some new and unusual Birth: for in what manner soever she acts, she must not be thought to depart from their Placits. And if they cannot govern her in her Proceedings, they will bend her Proceedings to their Opinions; for if the *stubborn Mountain won't vouchsafe to come to* Mahomet, *then* Mahomet *will humble himself to go to the Mountain.* Chap. 10.

In short, from these brief Heads of the Doctrines of former Ages, the young Student may easily observe how the antient Physicians, endeavouring in all things to accommodate their Hypotheses to the pompous Forms of Scholastical Learning, did by that means insensibly introduce Difficultys, if not Absurditys, into that Art, even according to their own Principles. For by their great Master's Hypothesis, Diseases for the most part proceeded from some *Intemperies* in the Humours, or at least in the Parts of a Human Body; and so were only, according to that Doctrine, Affections of them: whereas by their Forms of treating them under certain Kinds, they represent them as having real and specifick Natures; each Disease having an Essence as well as its Accidents;

Chap. 10. Accidents, whereby it was to be diversify'd and known: which learned Form of speaking, naturally inclin'd Men to think of Diseases, as if they were somewhat antecedently existing, and so enter'd or were convey'd into the Bodys of Men.

But if the young Student is so pleas'd with this Tast of these Doctrines, as to covet a farther Information, he may fully satisfy himself in

Galeni Operibus.
Sennerti Institutionibus.
Fernelii Physiologiæ & Pathologiæ libris.

Or if he is desirous to learn the Opinions of others concerning these Matters, he may read the following Authors; in the perusal of whom, altho in several particulars he may meet with some Disagreements, yet he will in the general find that they do agree in what I have above-recited.

Petr. de Peramato Opera Medic. de Elementis, Facultatibus, Humoribus, Temperamentis, &c.
Arch. Piccolhominus in libr. Galeni de Humoribus Comment.
Jacob Sylvii Opera Medica.
Anton. des vander Linden Physiologia de Elementis, Temperamentis, Humoribus, &c.
Laurent. Jouberti Opera Medica.
Joh. Cratonis Periocha Methodica in Galeni lib. de Elementis, Temperamentis, Facultatibus, &c.
Mel. Sebizius in lib. Galeni de Morbor. Differentiis.
——*De Morb. Causis, de Symptom. Causis, &c.*

Mel.

Mel. Sebizius de Facultat. Naturalibus, &c. Chap. 10.
and in a multitude of others.

10. It may not be improper to observe, that tho the Doctrines above-mention'd were generally receiv'd amongst Physicians, and publickly taught in the Schools of *Europe*; yet there sometimes appear'd in those Ages Physicians of another *Sect*, who were the Followers of *Hermes*, as the others were of *Galen*; and these built their Hypotheses upon Principles intirely different from the former. For whereas the *Galenists* suppos'd the Origin of all natural Substances to be from the four common Elements, and the various Alterations in such to proceed from the four first Qualitys; these suppos'd the Seeds of all Beings to be their *Chymical Principles*, and their various Alterations to flow from their active Powers; and according to the Prevalency and Predominancy of these, the different Tempers of Human Bodys do arise. *Doctrine of the Chymists.*

But tho these two Sects so intirely differ'd in their Principles, as that they always wrangled about them; yet they both for the most part agreed in the Forms and Modes of treating and explaining Diseases: for which reason it does not seem necessary to repeat the Heads of such Doctrines, since the *Galenical* Elements being only chang'd for the Chymical Principles, the manner of solving the Phenomena are the same; both Sects having agreed in the learned Part, *viz.* in explaining Diseases in Scholastic Forms. *Chymists and Galenists agreed in the general Nature of Diseases.*

*

But

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But if the young Student is desirous to be inform'd more largely of these Chymical Doctrines, and likewise of the Differences between the *Sects*, and for what these Chymists reproach and revile the *Galenists*, let him read

Aureoli Philippi Theophrasti Paracelsi Opera Medico-Chymica.
Jo. Baptistæ van Helmontii Opera omnia.
Andr. Libavii Opera Chymica.
Hon. Nollii Theoria Philosophiæ Hermeticæ.
——— *Systema Medicinæ Hermeticæ.*
Joh. Hartmanni Opera omnia Medico-Chymic.
Herm. Conringius de Hermetica Medicina.
Gunth. Bilickii Observat. & Paradox. Chym.
Dan. Mylii Opus Medico-Chymicum.
Jo. Kunkelii Philosophia Chymica Experimentis confirmat. which is likewise publish'd in English in the *Pyrotechnical Discourses.*

New Hypotheses form'd in this last Century.

11. The young Student may likewise observe, that this last Century has been very prolific in forming Hypotheses for explaining Diseases; for since the wonderful Discovery of the Circulation of the Blood, and some other Anatomical Experiments and Observations, which were plainly inconsistent with the *Galenical* Hypotheses, divers learned Physicians have endeavour'd to contrive Hypotheses to solve the several Phenomena of Diseases, which might be agreeable in all things to such clear and manifest Truths. But altho most of these modern Coiners of Hypotheses depart from the antient Methods of explaining Diseases, in that *Galen*'s System is inconsistent with the modern Discoverys, as has been already observ'd;

ſerv'd; and altho likewiſe they frequently diſagree amongſt themſelves about the Parts affected, or manner of affecting; yet they all agree in treating Human Infirmitys under certain kinds of Diſeaſes: And the Moderns are unanimous in raiſing their Syſtems on the Chymical Principles; and ſo in truth could not rationally much differ from the Chymiſts in their Methods of Cure, did they not intermix likewiſe ſomewhat of *Galen*'s *Doctrine of particular Facultys in ſome Medicines of affecting particular Parts, with thoſe Principles*; and by this means, in their Methods of Cure, they ſeem to unite and join the two different Hypotheſes, *viz.* that of *Hermes* and *Galen*, by adding the *Chymical Principles* to the *Galenical Facultys*, of Medicines reſpecting this or that particular Region or Part of a Human Body: for without this they could not have reconcil'd their Chymical Hypotheſes to the curing of Diſeaſes, agreeable to the *Harveian* and other modern Diſcoverys. Amongſt theſe our learned Countryman Dr. *Willis* is deſervedly to be firſt nam'd. Chap. 10

This great Man, convinc'd of the Vanity of the *Galenical* Hypotheſes, intirely adher'd to the *Chymical Principles*; for he endeavours to explain the great variety of Alterations which ariſe in the Blood, from a Fermentation there: and that Fermentation he ſuppoſes to proceed from a ſort of Strife or Colliſion amongſt the *active Chymical Principles* abounding in that as well as all fermentative Subſtances; and that the different Natures of Diſeaſes do proceed from the Prevalency and Predominancy of ſome of theſe Principles

Chap. 10. Principles in the diseas'd Parts: As the young Student may collect from his Tracts

De Fermentatione,
De Febribus,
De Scorbuto,
De Sanguinis Accensione.

But then this learned Gentleman endeavours to accommodate the Diseases arising from this Collision of the Chymical Principles, to the several Parts of a Human Body, agreeable to Anatomical Discoverys; as plainly appears by his manner of explicating nervous Diseases: all of which he judiciously suppos'd to be form'd by the Irregularitys of the Spirits, and these Irregularitys to proceed from some unnatural Predominancy of some of those Chymical Principles, by which means their tumultuous Explosions are formed. *Vid.* his

Cerebri Anatom. Neurologia.
De Morbis Convulsivis Pathologia.
De Anima Brutorum, par. 2.
De Motu Musculorum.

And this most celebrated Hypothesis of the Great *Willis*, altho elegantly contriv'd, and in all its Parts judiciously adjusted to the *Harveian* Circulation of the Blood, and other late Anatomical Discoverys, for explaining the various Phenomena observ'd in Diseases; yet it is manifest, so far as it regards the general *Therapeia* and *Medendi Methodus*, it was intirely rais'd upon the Spagyrical Principles; and departs in nothing from

from that Doctrine, except only as somewhat of *Galen*'s *Doctrine concerning the particular Facultys* which some Medicines have to respect particular Parts of our Bodys, were curiously interwoven and mix'd with it: as plainly appears from what he writes concerning the several kinds of Medicines, viz. *Cephalics*, *Pectorals*, *Splannichal*, *Hysterical*, &c. in his several Works. Chap. 10.

Fran. de la Boesylvius, dissatisfy'd with former Hypotheses, contrives and dresses out a new one: for altho he uses the Chymical Principles, yet he supposes a continual Collision or Effervescency between two different Juices prepar'd in a Human Body; one of which, the Bile, he supposes to partake of a sulphureous and lixivial Salt; and the other, which is the *Succus Pancreaticus*, to partake of a saline Acid: And according as this Effervescency or Fermentation between these two Juices of contrary Natures, is either regular and natural, or irregular and preternatural, the Body will partake of Health or Sickness; and that Diseases are deriv'd and form'd in particular Parts, according as the different Parts of a Human Body are affected from the Fault or Vice of these Humours. But the young Student may farther inform himself of the Particulars of this Hypothesis from the several Writings of that Author, *viz.*

Fr. de la Boesylvii Disputationes Medicæ.
——— *Praxeos Medicæ*, 4 *vol.*
P. Barbettii Praxis, cum Notis Fr. Deckers.
Le Graaf de Succo Pancreatico.

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Fr. Deckers Exercitationes Medica; and several others who go upon the same Principles.

There are some other learned Men who have lately form'd Systems of Physick agreeable to Anatomical Discoverys, as may be learn'd from the Writings of several of them, such as

J. Dan. Horstius in his *Manuductio ad Med. Physica, Hypocrat. &c.*

Cor. Vit. Schneiderus in his several Medical Treatises.

Vap. Plempii Fundamenta Medicinæ.

Dinghemii Fundamenta Medico-Physica.

Etmulleri Opera Theoretica & Practica.

Alb. Kyperi Institut. Medicæ, & reliqua ejus Opera Med.

Hen. Regii Fundamenta Medica.

——— *Praxis Medica.*

Geor. Baglivii Opera de Fibra Motrici, Praxis Medica, &c.

G. Moebii Fundamenta Medicinæ Physiolog.

——— *Synopses Epitomes Medicinæ Practicæ.*

Tho. Boneti Sepulchretum, sive Anatomia Practica: and a numerous Tribe of others; besides a multitude of small Retailers, who have only borrow'd other Mens Notions, and aukwardly dress'd them, and then sent them abroad for their own.

But the Principles which most of these, with many others not mention'd, have us'd, being the same, *viz. Chymical*, altho they somewhat differ in explaining Diseases, and in their

their Methods of curing them (in that they do not always precisely agree in the Parts immediately affected, nor perhaps in the Uses and Affections of such Parts of a Human Body as are the immediate Subjects of Diseases) yet there being no real and substantial difference amongst them, in that they all agree in Principles (altho they disagree in the Modes and Ways of such Principles exerting their Powers, or perhaps in the Parts griev'd) therefore I think it needless to give any farther account of them, they being in truth only Branches of Chymistry grafted upon *Galenical* Stocks, and planted in Soils cultivated by modern Anatomists. Chap. 10.

There has been another Set of Men, who altho they agree in the use of Chymical Principles, yet would labour to deduce all Alterations, and even Diseases themselves, from what they term Fermentation; which they feign to be a certain Disorder in Bodys, arising from a Mixture of disagreeable Qualitys: which if the young Student is desirous to know how they have explain'd, he may consult

Kergerus de Fermentatione.
Melch. Gauderi Diatriba de Fermentis.
Hoffmanni Exercitat. Acroamatica de Acido & Viscido.
Andres Dissertatio de Acidis & Viscidis.
Swalve Alkali & Acidum.
Stookius de Fermentis & Fermentat.
Fran. de la Boesylvius Disputationes Medica.

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But if he is desirous to learn what is really understood by Fermentation in Liquids, he will find it explain'd in

Specimen Physico-Medicum de Corp. Human.

However I cannot but observe, that our learned and judicious Countryman Dr. *Sydenham*, neglecting all uncertain and precarious Principles, and despising all trifling and whimsical Hypotheses, proposes only Observations as his Rule of Practice; and according to that, forms Historys of Diseases. And yet, notwithstanding this his most just and rational Method, such was the power of Education upon that most excellent Person, that he could not forgo the common Opinions of certain Natures appertaining to Diseases; and accordingly thinks all of the same kind should be treated much in the same Method, as is most manifest from all the Writings of that great Man.

CHAP.

CHAP. XI.

Knowledg of the Powers of Medicines obtain'd. Symptoms to guide the Use and Application of them. Two things necessary to be understood to come to a true use of Medicines. 2. Symptoms, when consider'd as Guides for the use of Medicines, call'd Indications. 3. Two general Motions in the Parts of a Human Body, viz. *Natural and Animal. 4. Indications to be taken from the Blood. Two ways of judging of the Affections of the Blood. Indications from the natural Motion. Indications from the Animal Motion. 5. Indications from the Spirits. How to be taken. 6. Indications from the separate Juices. How they appear, and what they denote. 7. The Summary of the* Galenical *Doctrine of Indications.*

1. THE young Student being stor'd with a knowledg of such Substances as are us'd as Medicines, and likewise having acquainted himself with their general Natures, either as endu'd with a power of procuring Evacuations, or as they only make Alterations; and likewise having so far inform'd himself in the Offices and Uses of the several Parts of a Human Body, as to be able to form Ideas of Diseases; his next step is to be instructed in the Use and Choice of Medicines proper for the removing of them. *Knowledg of the Powers of Medicines obtain'd.*

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Use of Medicines from the Symptoms.

For this purpose he must carefully observe, and seriously weigh the *Symptoms*, *Signs* or *Appearances*, that by them he may be directed to the Part or Parts, from whose Vices or Infirmitys such Sickness, Indisposition or Disease does proceed: For Medicines being to be imploy'd as the Instruments for the curing or removing such bodily Infirmitys as are term'd Diseases, it is manifest, unless the Parts affected can be discover'd, it must be difficult to discern what sort of Instruments are to be imploy'd for the remedying them.

For tho the young Student may be so fully instructed in the Efficacys and Operations of Medicines, as to know this will *purge*, or that will *vomit*; or this is a *Cordial*, and that an *Opiate*, &c. yet unless by the Symptoms or Appearances in the Diseas'd, he can be directed which are the Parts then affected, he must be bewildred in his Thoughts to understand what kind of Medicines to imploy for the Benefit and Relief of the Diseas'd: In that Medicines being such things as are intended to be administred for the Relief of Human Bodys, when groaning under Afflictions; it is plain the Miserys and Maladys of such diseas'd Bodys are to be regarded, if we expect any benefit from them, and not our own abstract Notions of Diseases.

Two things requir'd to understand the true use of Medicines.

And the great Wisdom and Skill of a Physician seems to consist in the exquisitness of his Judgment, in making choice of such Medicines as, by their known Operations, are best fitted to answer this Intention. But in order to enable him judiciously to perform this

this Work, these two things are requir'd: Chap. II.
First, *To have a Knowledg of those Parts of a Human Body, by whose Faults or Infirmitys such Sickness or Disease does arise.* And, Secondly, *a Knowledg of the Powers and Operations of such Medicines as he proposes to use for the removing them.*

Symptoms, when us'd as Guides for the use of Medicines, are termed Indications.

2. And as the Parts affected in Diseases are discover'd by Signs and Symptoms; so these are to the Physician, what the Needle is to the Mariner, the Guide which must direct him in the Choice and Use of such Medicines as are proper for removing them: And when the Symptoms or Signs are consider'd for that purpose, they are honour'd with a new Appellation, and called *Indications*, because they are suppos'd to indicate and point out what Methods or Medicines are fit to be us'd, for the curing or removing the Disease to which they belong.

But because all Diseases, as has been already demonstrated, do flow from some Faults or Disorders amongst the Parts of a Human Body, by which their Offices and Uses are perverted or impair'd; and such Faults or Disorders, wherever discover'd, are necessarily occasion'd either by the *Blood, Spirits, or Appropriate Juices*; therefore all the Indications which point out to us the true use of Methods and Medicines, do naturally proceed from some of those Fluids.

But by reason the *Blood, Spirits and Juices* are the proper Subjects of all Diseases which directly fall under a Physician's Care (for as to Diseases perfectly Organical, they seem rather to be the Provinces of Chirurgery

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than Physick strictly taken) and all those Fluids being included and contain'd in the solid and consistent Parts, by which means they are directly excluded from operating upon us, in that they cannot immediately approach our Facultys: therefore the Vices and Irregularitys of these conceal'd Fluids can never be directly reveal'd to us, but are only perceiv'd as they are convey'd or communicated by some other Substance, which is by Nature so plac'd, as to fall under the view of some of our Facultys; and the Substance which makes this Discovery to us, must be some of the Parts of a Human Body which appear diseas'd, that is, which are disabled in the performance of their regular Offices and Uses. And in that the Offices and proper Uses of all the Parts of a Human Body are perform'd by some Degrees or Modes of Motion (because without Motion natural Substances must continue in an unactive State) therefore all the Vices and Irregularitys happening in a Human Body, are most certainly occasion'd from some Failure or Disorder in Motion.

Two general sorts of Motion in a Human Body.

3. There are most manifestly two sorts of Motions to be observ'd in a Human Body, *viz.* *Natural* and *Animal*. The natural Motion is only the separate Motion of the minute Particles of any Substance, and so is proper to all Fluids (whose very Natures are founded in that Motion) *viz.* as well those contain'd in a Human Body, as those existing without it. The Animal Motion is proper to a Human Body as 'tis an Animated Being, and is strictly confin'd to a certain Form and Harmony of the Organs of such

ſuch Beings; for this Motion always ceaſes upon the diſſolution of the Form of the Organ, or upon the deſtruction of the Harmony and Concord amongſt the ſeveral Parts.

The inteſtine Motion of the minute Parts of any Subſtance is the very Characteriſtic that entitles a Subſtance to be term'd a Fluid. And the very Animal Motion, altho immediately executed by the Conſiſtent or Organical Parts; yet is made and produc'd in ſuch Parts by an Influx of Fluids, prepar'd and appointed for this purpoſe. For if we but heedfully obſerve all the ſteps by which Animal or Organical Motion is perform'd, we ſhall evidently diſcern that it is originally excited, and always continu'd by the natural one; for withhold but the Influx of the Fluids into ſuch Organs as are the Inſtruments of this Motion, and they will be immediately ſtript of it: By which it appears, that the Organs are only paſſive in this Motion, and no farther contribute to it, than as they are faſhion'd and fitted to be eaſily put into Motion by theſe Fluids.

The Indications which point to us the Sorts and Kinds of Medicines to be adminiſtred, muſt be ſuch as proceed from either *Blood*, *Spirits*, *or Appropriate Juices*; by reaſon the Affections of the Organs are not to be directly better'd by internal Medicines, as has been before demonſtrated.

4. The Indications which direct the Diſeaſes of the Blood, muſt be ſuch as proceed from the Vices or Defaults in the Offi- *Indications taken from the Blood.*

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ces and Uses of that scarlet Gore, and which therefore appear to us by such Means and Methods as the natural Offices of the Blood do. And it has been already demonstrated, that there are but two ways of discovering any thing which appertains to the Nature of the Blood (so long as it continues a part of a living Human Body) *viz.* by *the Motions*, or by *the Separations*. For which reason all the Indications which have regard to the Discrasy of that Liquor, must be drawn from one or both of these ways.

Two ways of judging of the Blood.

The Indications to be taken from the Motion of the Blood, are of two sorts, *viz.* either such as arise from some Changes or Alterations in the natural Motion, or such as are deriv'd from some Faults or Disorders in the Animal Motion.

The Faults, in the natural Motion of the Blood, appear by the Changes in the Degrees of Heat (for what we term Heat is nothing in Substances, but certain Degrees of Motion in their minute Parts) and therefore the Heat of the Blood will necessarily increase and lessen, as the minute and constituent Parts of the Blood are more or less mov'd; and the differing Degrees of Motion, amongst the minute Parts of the Blood, can be discover'd by us no other way than by means of the consistent Parts of the Body, which interpose between the Blood and our Senses; and therefore are only discern'd by our Fingers, or our Touch, which are the Instruments for that Use.

Blood naturally warm.

Blood, as it is a part of a Human Body, is naturally endow'd with a certain Degree

gree of Heat; and therefore whensoever it declines from that State of Heat which is congenite to its Nature, it must necessarily become uncapable to perform all the Offices appertaining to it as a part of a Human Body. And this it is obvious it may do two ways, *viz.* its native Heat may increase, or it may lessen: The first of these is most usual, the last more rare. The Increase of the natural Heat plainly indicates that the Motion of the minute Parts is too quick and violent; and therefore that Motion should be retarded or abated: and accordingly such Medicines are to be administred as are endu'd with Powers to do this. Whosoever will but impartially consider the Blood in its full Circumstances, will easily be convinc'd of these fundamental Truths, *viz.* how, as 'tis a part of a living Human Body, it has a circular Motion which is essential to Life; and how likewise its minute Parts, as it is a Fluid, must always move amongst themselves; and also how only Rest is contrary to Motion. And from these Truths, rightly consider'd, it will be difficult for Human Reason to comprehend how any Substance should have a power directly to cool the Blood without destroying those Propertys which are inseparable from Life. And indeed Experience shews there have as yet been none such discover'd; that is, no Medicines which will safely and directly cool the Blood, without endangering or destroying the Life of the Body. Nor in truth, if we seriously reflect upon these things, is it possible to conceive how it can be effected; since Rest is only

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The native Heat of the Blood either increas'd or lessen'd.

contrary

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contrary to Motion. And ſhould the Particles of the Blood be (by the power of any Subſtance admitted into them) ſo arreſted, as to ſuppreſs their Motion, the Nature of the Blood muſt be chang'd, and its Fluidity loſt, and of conſequence Life it ſelf ceaſe; becauſe the progreſſive Motion of that ſcarlet Fluid is, ſo far as we can diſcover of the Nature of Life, eſſential to it. But to return to our preſent purpoſe, whenever the Violence of this inteſtine Motion of the Blood is abated, all the Effects flowing from that Motion will ſpontaneouſly vaniſh.

Whenever the Blood appears to be too cool, by the too much leſſening of its native Heat, it directly indicates the uſe of ſuch Medicines and Methods as will quicken and invigorate the inteſtine Motion of the minute Parts: And this Experience teaches us is not ſo difficult to be done as the former, whenever the Blood can be continu'd in its circular Motion.

The Animal or circular Motion of the Blood proper to Life.

The Animal Motion of the Blood is the Progreſſion or Circulation; and this Motion is proper to Life, and begins and ends with the Animal. The Blood in this Motion is only paſſive, for it is impel'd and drove forward in its proper Channel by an Impulſe or Force receiv'd from the Heart. And as this Motion is eſſential to Life, ſo there is ſome certain degree of this Motion eſſential to the Health and Perfection of the Body; becauſe whenever this Motion appears unnaturally violent, or unuſually ſlow, the Blood manifeſtly declines in its Offices, and the Body becomes infirm or diſeas'd. And the Blood being after this manner moved

ved in Circulation, may easily swerve from that degree of Motion which is necessary for the Health of the Body, from two very different Reasons, *viz.* either from some Vice or Default in the Impulse it receives from the Heart for making this circular Motion, or from some Unfitness of the Blood it self, in that it is become uncapable of running thro the narrow and meandring Pipes and Passages it must pass, for the continuing of that Motion. Chap. 11.

The Circulation of the Blood alter'd from what Causes.

The circular Motion of the Blood may be alter'd from the Impulse it should receive for the making of that Motion, two ways, *viz.* either from the Organ it self which gives the Impulse, *viz.* the Heart, or its Appendices; or from the darting Spirits which communicate Motion to the Heart for this purpose. For if the Heart is rendred uncapable of giving the Blood the regular and due Impulse, the progressive Motion must be alter'd: and this Incapacity may happen from divers Causes, some external to the Heart, some internal. Of the first sort are *Wounds*, *Alterations in the Liquor contain'd in the* Pericordium, *or external Compressions from Excrescencys or Tumours*, either upon the Heart it self, or its Appendices, or from the contiguous Parts, *&c.* Of the other sort are unusual Substances (it matters not by what names dignify'd) either form'd in the *Ventricles of the Appendices*, or from an alteration of the Vessels themselves, as when they become *osseous*, *hard*, &c. The Indications denoting these are some manifest, as in the Case of Wounds; some occult, as in most of the others.

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others. However, when the Circulation is affected and alter'd by any of these Causes, the Alterations will be permanent by reason the Cause is so: And the Indications which point out these will not much direct the use of Medicines, since such Infirmitys of the Organs are not often to be remov'd by internal Applications.

But if the Faults, Deficiencys or Irregularitys of the Impulse proceed from the Influx of Spirits, which are to actuate and give motion to the Heart; then the Faults or Disorders of the Spirits are to be corrected before the Circulation can be alter'd. The Indications which point out and direct the Circulation to be alter'd from this reason, are to be known by observing and comparing the Circumstances of the Spirits, in relation to the exercise of their Offices in other Parts; and more immediately appear from the manner of the Pulse, which usually, when disturb'd from this reason, is quick, weak, uncertain, and frequently shifting and changing as to the frequency and strength of its Vibrations: And the Spirits in this Case are to be treated, as in all others, according to the Nature and Beginning of such their Disorders.

Indications from the Alteration in the circular Motion of the Blood.

The Indications which point out to us, that the Faults observ'd in its Circulation proceed from its own proper Faults and Vices, are such as manifestly proceed from some Errors or Defects in those Offices which appertain to its Nature; such as are Nutrition, which should be equally distributed to all Parts, the visiting and pervading in just proportion all the Regions of the

the whole Body, and the nimbly running thro and passing from them, and so leaving no other Marks nor Remainders of its Parts, than what are in quantity proportionable to the Uses of every Member, and in quality answerable to the singular Nature of every one. From this reason all Spots, Pimples, Pustles, or Discolorations upon the Skin, as likewise all Tumours of what nature and kind soever, all Fulness and unusual Increase of Bulk in any Part, as also all Emaciations and particular Defects or Excesses in Heat in any particular Parts or Regions, indicate the Circulation to be alter'd by some Faults of the Blood it self. And these therefore require the use of such Medicines, whose Operations are perform'd in the Blood, and whose Powers so affect the Blood as to assist it in removing these Alterations. Chap. II.

The Indications to be observ'd from the Separations of the Blood, and so appearing in the secreted Juices, will be more properly handled under the third Head, which will treat of the Indications to be collected from the third sort of Fluids.

5. Indications taken from the Spirits, or the second kind of Fluids, are always collected from such Actions or Functions as are perform'd by them; which, as has been already shew'd, consist in *Sensation or Organical Motion, one or both of which may become alter'd*, either from some Defect in Motion, or Influx of the Spirits into the Parts or Member of the Body, or from some Irregularity or Tumult in them: when from the first, such Diseases are form'd as are denominated *Indications from the Spirits how taken.*

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nated *Coma*, *Palsys*, &c. and their several Degrees, as Apoplexys, Lethargys, dead Palsys, *&c.* When from the last, Epilepsys, Convulsions, Hysterical and Hypochondriacal Passions or Fits, *&c.* with their Degrees. And both these kind of Affections of the Spirit indicate the use of such Medicines as will answer to the Nature of these their Faults or Disorders, *viz.* either such as exuscitate and rouse them, as in the first Case; or such as repress and quiet them, as in the last Case.

Indications from the separate Juices.

6. Indications of the third sort are those deriv'd from the appropriate Juices, which tho of very different natures, are yet all deriv'd from the same Blood. The Indications from these are either taken from their Quantitys or Qualitys: If from the first, they plainly refer to the Blood; for the secretory Vessels being only passive in the preparing Juices, it is clear, either the Increase or Diminution of their usual and natural Quantity must intirely depend upon the Disposition of the Blood, in affording more or less Materials for the making such Juices. And therefore the Indications taken from this Head, can only refer to the Choice and Use of such Medicines as are fitted to dispose the Blood to separate or not; by which the Quantity of these Juices must be either increas'd or lessen'd.

Indications from the Juices what they denote.

But if the Indications are taken from some Alteration in their Qualitys only, that is, that their Natures are chang'd, and so their Uses perverted; then such Alterations seem to proceed from the secretory Vessels themselves, in that they are someways affected

fected or injur'd, and so hindred in their Work. And this may happen from several Reasons, *viz.* either in that some Substance is form'd within them, or from some Change in the Texture of them, or from some Compression without them; neither of which indicate the use of much Medicine. And the Affections of these Juices arising from these Causes, are for the most part permanent, and so not difficult to be known: whereas when the Qualitys of these are alter'd, in that the secretory Vessel is hindred only for a time in its Work, then these Juices alter by Intervals; which plainly shews, that such Vessels are only secondarily affected, and so proceed from some Disorder in the Spirits; and therefore indicates the use of such Medicines as are fitted to divert or quiet such Disorders. Chap. 11

But notwithstanding the Signs and Symptoms (which, when consider'd as directing the use of Medicines, are term'd Indications) are all of them, so far as they concern the use of Medicines, founded in the *Blood, Spirits, or Juices:* All of which have been explicated, in manners agreeable to the certain Nature of such Parts; as Anatomical Discoverys, and undoubted Experiments manifest; and therefore are what the young Student ought only to regard. Yet in that the greater part of practical Writers have, in treating of these Subjects, adher'd to the Forms and Methods instituted by their great Master, I shall, according to the Method observ'd upon other Heads, briefly explain the Use which former Writers made of these things.

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Galenical Doctrine of Indications.

7. But that the young Student may the better comprehend the Use formerly made of Indications, I must remind him of somewhat concerning the antient Doctrine of Diseases. The *Galenical* Hypotheses suppos'd Diseases to proceed either from the Affections of the similar or organical Parts of a Human Body; and that such their Diseases either arose from *Intemperies*, or from some *Vice or Fault in their Substance*, as has been already observ'd. And according to this their Doctrine, the Indications of the first were such Appearances or Signs as denoted the too predominant Qualitys in the Part affected; and so were as Guides to direct what Methods were to be pursu'd, and what Medicines administred, in order to break the Power, and weaken the Dominion of the too redundant and peccant Qualitys: for, according to that Doctrine, *Perit quodque in Contrarium & e Contrario.* But in the latter, they denoted the Affections of the Substance of the Organ, that so, by the same Rule, Remedys might be apply'd, which had Facultys to correct such Evils.

But when the Disease, whether confin'd to a particular Region, or extended to the whole Body, proceeded from what was termed a *Plethora* or *Cacochymia*, the Indications did then direct the evacuating the redundant Humour in such ways and methods as its Nature seem'd to admit or require. It is true, according to this Doctrine, there sometimes occur'd very great Difficultys in these things; for sometimes the Indications did appear *Complex*, and so denoted the Complication of different Diseases,

eases, or the Existency of different *Intemperies* in divers Parts: from which reason it became difficult to determine what kind of Methods to pursue, or what sort of Medicines to use; in that the Symptoms, according to that Doctrine, did perhaps require very different ones. However, the Expedient they recommended for removing this Difficulty was agreeable to their Hypothesis: for when the Circumstances of the Diseas'd did admit, the different Diseases were to be respected; but when this could not safely be done, that which was most formidable, and so more immediately threatned the Life of the Patient, was to be more particularly regarded.

Indications suted to Hypotheses.

In short, the young Student will observe that Physicians have always suted what they term Indications to their Hypotheses. Thus the old *Galenists* suppos'd the Indications always to answer to their Doctrines of the four first Qualitys, and of the four Elementary Humours. For as all Diseases were thought to be form'd from some Predominancy of some of these above the others; so consequently all Signs must denote this, and all Methods and Medicines, which were prescrib'd for the remedying of Diseases, were suppos'd to regard this Intention. And, according to this, *Fernelius*, who seems to have introduc'd a new set of Diseases, as formerly hinted, introduc'd likewise new Indications to denote them.

From the reasons formerly mention'd, it will appear but trifling to repeat the Doctrine of the Chymists concerning Indica-

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tions; because they intirely agree with the *Galenists mutatis mutandis*; that is, their Principles being only put in the place of the other's Elements and Humours.

However, this I shall observe, that as a serious Examination into the Nature of Substances does abundantly evince the precarious Vanity of the *four Elements* and *first Qualitys*; and as Anatomical Experiments and Discoverys do fully demonstrate the Falsity and Absurdity of the *Galenical Humors*, and common and *particular Facultys*; so likewise the Uncertainty of the Chymical Doctrine clearly appears by the Difference and Diversity which may be observ'd in the Propertys of those parts of Substances, which being divided by the Fire are termed *their Principles*: as appears by what is demonstrated in the Honourable

Mr. Boyle's *Sceptical Chymists.*

Wherefore the Foundations of these Doctrines being manifestly false, the Superstructures must necessarily fall: and for this reason it is needless for the young Student to puzzle himself about Indications drawn from these latter Doctrines.

But if he is desirous to be more largely inform'd in the Doctrine of Indications, as describ'd by *Galen*, and imitated and approv'd by most Physicians, he may read the Works of that Great Man, but more especially his Treatise

De Morbis Curandis. As likewise,
D. Sennerti Institutiones Medicæ.

Lud.

Or he need but observe what use most Physicians, as well antient as modern, have made of them, in their Practical Writings: In all which I think, I may affirm, he will find them adapted to their several Hypotheses.

CHAP. XII.

The use of Medicines to be collected from their Operations. Operations of Medicines effected by communicating Motion. 2. *Parts of a Human Body capable of receiving Motion two ways,* viz. *either as admitted into the Fluids, or by the Organs. Manner how each is affected.* 3. *Two sorts of Medicines, such as evacuate, or such as alter. Medicines procuring Evacuations, either stimulate in the Organ; or being receiv'd into the Blood, disturb it. Manner of doing it. Alterative Medicines may operate in both the same ways. Their Operations explain'd. The Body how affected by them.* 4. *Motion excited in the Organs by Irritation. Exceeds the Power of the Cause. In Purging, the natural Motion of the Bowels is intended. In Vomiting the Motion of the Stomach inverted. Medicines exciting these. The Evacuation but the Effect of this Motion.* 5. *Sternutatory Medicines, their Operations. Operations of fœtid Medicines. Operations of* Opium. 6. *Other sorts of Medicines operating in the Blood.* 7. *Little said of the Operations of Medicines before Dr.* Willis. 8. *Old* Galenists *suted their Opinions of Medicines to their Hypothesis of Diseases.* 9. *And the Chymists have done the same in favour of their Principles.*

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1. AS the Indications point out to us the State and Condition of the diseas'd Body, and thereby lead us into an understanding of what sorts or kinds of Medicines are requisite to be administred for the relieving of oppress'd Nature; so the Knowledg or Understanding of the Operations of Medicines must direct us in their Use and Choice. *Use of Medicines from their Operations.*

To comprehend the Operations of Medicines, it will become us to consider that a Medicine is only a natural Substance, which acquires that Appellation, because it is to be administred or apply'd to a Human Body, for recovering or preserving its Health. A natural Substance being only term'd a Medicine, from the Use or Relation it is to have to a Human Body: By which relation no new Power is added to it; for it continues the same Substance, and therefore necessarily acts as a common and natural Agent. To comprehend then the Operation of Medicines, we must not separately or disjunctively consider the Powers of the Substance we so call, but conjunctively, as those Powers are imploy'd upon such a Patient; because if the Patient, which is a Human Body, is not in a capacity to be affected by such Powers, the Medicinal Virtues, which are relations to such a Body, cease. The Powers of all natural Substances, in operating upon, or affecting others, are exerted by their imparting some Modes or Degrees of Motion: And the Capacity of the Subject or Patient to be wrought upon *They operate by communicating Motion.*

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by such Agents, is only from their Aptitude to receive such Motions as the Agent imparts.

The Parts of a Human Body capable of receiving Motion two ways, either as admitted into the Fluids, or by the Organs.

2. The Parts of a Human Body are capable of receiving Motion from Medicines in two different ways: The first is as they are natural Substances; the Second as they are endu'd with those Forms which are requisite to a Human Body. The first kind of these Motions is receiv'd immediately by the Fluids, which are only capable of being thus mov'd; and this is what I have termed the natural Motion: The last by the Organs, and so is proper to that Matter only which is form'd into a Human Body. For when once the Parts of Matter are so divinely organiz'd, as to be beautify'd with those Forms and Propertys which constitute a Human Body, they become capable of being affected by Substances in a far nobler way than before they were so shap'd, that is, before they were moulded into a Human Body. For natural Substances, which are term'd Medicines, have then a power, by the means of the Divine Structure, Formation and Harmony of the Parts of such a Body, to communicate divers Modes, Determinations and Degrees of Motion, which they were uncapable, before they were so organiz'd, of receiving.

The Parts of a Human Body have been consider'd under two kinds; The one of which, from the continual Motion of their minute Particles, are term'd *Fluids*; the other, from the Union and Cohæsion of their Particles, *Consistent*: And both these are capable of being affected by Medicines.

But

But the manner how each of them is affected, must be learnt from a Consideration of their Forms, Structures, Uses, Situations, Communications, Relations, *&c.*

Fluids how affected by Medicines.

The Fluids are contain'd in the *Consistent Parts*, and so are not directly to be affected by Medicines, but as they are convey'd into them, or as they are affected from them by the means of the Consistent Parts. The *Fluid* that receives the Parts of Medicine into it, is only the Blood, which is the *Ocean to the Microcosm* of a Human Body, to receive all the Rivulets of Juices from without, to be from thence dispers'd to all Parts. The Fluids affected by the means of the Consistent Parts, are only the Spirits, which, residing in the *Nerves and Fibres*, are affected from them.

The Medicines receiv'd into the Blood, exert their Powers amongst the Parts of the Blood; for being receiv'd into the Mass, the constituent Particles are forc'd to alter their present State. For

The State of the Blood, so far as we can conceive any thing of it, can only be changed from some Alterations effected amongst its Parts; which do only appear to us either by an Alteration in its Motion, or in its Separation: and the Motions and Separations (being inseparable from it as 'tis a part of a living Human Body) are not to be alter'd, unless the intestine Motion, or the various Determinations of that Motion amongst the minute Particles constituting its Mass, are alter'd.

Organs how affected by Medicines.

The Fluids affected by Medicines, by the means of the consistent Parts, are properly the

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the Spirits, which are the only Instruments prepar'd, and by Nature seated, to receive Impressions from Substances: for these residing in the *Nerves and Fibres*, are, by the means of those containing Parts, affected by the Powers of Medicine, and do propagate such their receiv'd Effects, according to the Nature and Extent of those their Vessels. And in this Case the *Fluid* being esteem'd as a part of the Organs, in that it is contain'd in them; the Operations of Medicines this way perform'd, may not improperly be term'd Organical: for, in truth, the Organs consider'd as making a part of a living Human Body, are no otherwise affected than by the means of these Spirits. Wherefore Medicines operating upon the consistent Organical Parts, are the same as those operating upon the Spirits; since such Parts are not to be affected but by the Spirits, which *actuate*, *move* and *give* a Sense and Life to them.

Organs actuated and mov'd by the Fluids.

And as it is certain that the Organical Parts have neither *Sense nor Motion*, but as they are actuated and mov'd by the darting Influx of the Fluids; so neither can they be affected by Medicines, but in such Parts only where such Medicines can immediately be apply'd to them; because where the Nerves and Fibres are too strongly guarded by the thick Coverings of the Body, such Substances cannot directly affect them: Therefore Medicines, exerting their Powers upon the Nerves or Spirits, will not operate upon Human Bodys, except in such Parts only where the great Author of Nature has laid the Nerve or Fibre open to the

the very touch of the Medicine, *viz.* in the common Passages leading into the Trunk of the Body, such as *Mouth*, *Oesophagus*, *Ventricle*, *Intestines*, &c. thro which all our Foods and Drinks pass, and the Nose in some measure as communicating with these. For when the Nerve or Spirits are in any other Parts affected immediately by Medicine, the consistent Parts which guard and cover them, such as the Skin, *&c.* are first by Violence torn off, as we may observe, by Blisters, *&c.* Chap. 12.

Organs directly operated upon by Medicines.

The Organs then, directly mov'd or operated upon by Medicines, are only such as are prepar'd for and imploy'd in the chusing, receiving, digesting and conveying such things as are taken into our Bodys for the support of our Lives, and continuation of our Subsistence: And these Organs are only sollicited into Motion by the Medicine; which Motion is perform'd according to the Nature and Use of the Organ, and not according to any specifick Property in the Medicine, which does no more than stimulate the Organ to move. It is true, the Motion of the Organ will be more or less violent, according to the force of the Cause which creates it; and according to the degrees of this Motion, the contiguous Parts will be more or less affected by it: As evidently appears from the Effects produc'd by *Errhiny or Sternutatory Medicaments*, by *Emetics*, *Cathartics*, *Glisters*, *Suppositorys*, &c.

Medicines either evacuate or alter.

3. And as there are but two general ways by which Medicines can operate upon Human Bodys, *viz.* either as they are receiv'd into the Fluids, or as they directly affect the Organs; so likewise there are but two general

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neral kinds of Effects produc'd by Medicines, *viz. Evacuations* and *Alterations:* By the first somewhat is discharg'd the Body; by the second, somewhat is alter'd or changed in the Body.

Medicines that evacuate either affect the Organs or Blood.

Medicines which have powers to procure Evacuations, exert those Powers either upon the Organs, or in the Blood, into which they must be receiv'd. If they procure Evacuations by the Organs, they perform it either by intending and quickning their usual and natural Motion, as all those which are term'd Purgers do that of the Intestines; or else they promote or occasion some unusual and violent Motion, as all Emetics do in the Stomach, and sternutatory Medicines in the Nose, and those Parts which co-operate in Sneezing.

How Medicines operate in the Blood.

Medicines, which procure Evacuations by exerting their Powers in the Blood, do someways so disturb the Mass, that some of its Parts are thrown or spew'd out by such Passages as are prepar'd to receive them and let them pass.

Medicines which make Alterations in Human Bodys, without promoting any Discharge from them, may likewise effect Alterations, either by the means of the Organs, or of the Fluids.

If by the Organs, the Motions of such Organs must be someways alter'd, that so their Functions or Uses may be chang'd; all which proceed from their Motions.

If they operate amongst the Parts of the Fluids, they must change the Motions or Positions of the Parts of the Blood; because by that only the Qualitys, Propertys or Operations can be alter'd.

For

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For a Medicine being a Physical Agent, can impart no other Powers to a Human Body than what it self virtually contains: Neither can it enjoy any other Methods of performing this, than by some Modes or Degrees of Motion; for it is Motion which makes all the Changes and Alterations that happen in natural Substances. Wherefore altho the Effects, which succeed to the Use of Medicine in Human Bodys, are usually attributed to the power of the Medicine; yet really and truly they are produc'd from a right disposition of the Parts of a Human Body to be effected from these Powers; the Medicine being only the Agent to move the Parts, and the Effects vulgarly ascrib'd to the Medicine, being really produc'd by the Motion only of the Parts, which the Medicine occasions.

Operation of Medicines the Effects of Motion.

To inquire then after the Operation of Medicine, is only to inquire how the Parts of a Human Body are mov'd or affected by Medicine; and the Method of discovering that, is the observing which Parts are affected from the Medicine, and what Effects or Alterations succeed the use of it: which for the most part are the same in all Bodys, in that they bear a resemblance and conformity in Figure and Structure; for where there is no difference in the Nature or Form of the Patient, it is but reasonable to conclude that the same Agent must produce the same Effects.

It is probable, from this reason, that most Drugs which are experienc'd to be *Emetic*, *Cathartic*, &c. are so to all Persons; because the internal Organs of a Human Body

do

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do for the most part bear so exact a resemblance, that whatsoever will disorder them in one Person, will do the same in another. It is true, this Rule seems liable to exceptions, in that there are some Substances which give Disorders to some Bodys, that are very agreeable to others, as may be instanc'd in Cheese, *&c.* However, it must be admitted for the most part true, and so may be assented to, as now us'd.

Motion by Irritation exceeding the Power of the Cause, only proper to Life.

4. But that the young Student may be the better prepar'd to form just Ideas of the Power and Operations of Medicine, it may not be improper to remind him of what has been formerly prov'd, *viz.* that there are two sorts of Motion readily to be observ'd in a living Human Body; one of which is perform'd by the Organs, the other is amongst the Particles of the Fluids. The Motion of the Organs is proper to Life, and continues no longer than that does: but the Motion of the Fluids is common to those without the Body as well as those within, and so is not essential to Life. The Motion made by the Organs may be promoted by Irritation, that is, such a Motion as is excited by a Cause inferior to the Effect: for the Motion, by that means produc'd, does alway exceed the Power of the Cause or Mover. For example, a violent Convulsion may be excited from a Cause which bears no proportion to the Force to be observ'd in that Motion: whereas the natural Motion of the Particles of a Fluid can never be raised to exceed the Power of the Impulse or Cause; for example, neither the Heat of the Sun nor Fire, can ever raise a Heat in any Fluid

Fluid to a degree beyond what such themselves enjoy. Chap. 12.

And as the Motion produc'd by Irritation, far transcends the Power of the Cause; so likewise may it be propagated to remote Parts which communicate only by the Organ: whereas the Motion communicated to the Fluids extends no farther than the Impulse receiv'd, can carry or continue it.

The Effects of Medicines operating upon the Organs are produc'd, in that their proper Motions are either *quickned*, *alter'd or quieted* by such: And herein consists a manifest Difference between Natural and Animal Motion. Natural Motion is not to be lessen'd, but as the moving Particles lose their Motion by communicating or imparting to Particles less mov'd than themselves; whereas Animal Motion may be quieted, hindred or stopt directly by the power of the Agent: Which Difference that the young Student may the better apprehend, I shall illustrate by Instances. Medicines which we term Purgers, manifestly intend the natural Motion of the Bowels, in that they force them to eject *per Anum*, what was contain'd in their Cavitys. And this Motion of the Bowels, as 'tis excited by what I have call'd Irritation, so it may be appeas'd directly by the Powers of Medicines: whereas in the natural Motion it is just otherwise; for the scorching Heats of the Blood, which are founded in the inordinate Motion of the minute, but constituent Particles, cannot be so extinguish'd: but the Mass cools, as the Motion of the Particles lessens, which is never effected by the immediate Power of

In Purging, the natural Motion of the Bowels is intended.

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of any Medicine, in stopping or quieting their intestine Agitations.

In Vomiting the Motion of the Stomach is inverted.

The Operations of Medicines we call *Emetics*, are perform'd likewise by Irritation; for these kind of Medicines only disturb the Motion of the Stomach, which from that reason inverting, forcibly casts up thro the *Oesophagus* what is contain'd in it.

Evacuations only the Effect of these Motions.

For Vomiting is effected by the inverted Motion of the Stomach, as Purging is by the accelerated Motion of the Bowels; the Medicine performing nothing in this Operation, but solliciting the Organs into these Motions. The Truth of this will readily appear, if the young Student does seriously consider the Formation, Offices and Uses of the Stomach and Bowels. However, he may find the manner of these Operations explain'd in

Dr. Willis Pharmaceut. Rationalis; and in *Specimen Physico-Medicum de Corp. Human.*

Sternutatory Medicines irritate the Parts into Motion.

5. The same may be observ'd of Medicines term'd *Sternutatory*, whether Liquids or Dry; which being only receiv'd into the Nose, do there so stimulate and fret the tender Fibres, as that the Organs imploy'd in Breathing (thro the communication they have by the Nerves with those Parts) are drawn into that violent Motion call'd Sneezing. And in this Operation it is particularly evident, that the Medicine can have no other part than solliciting and fretting the Organ, since it goes no farther than the Cavitys of the Nostrils stretch themselves; and yet the Effects extend to the Organs of

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the Thorax; and, which is further remarkable, all *acrid, biting or pungent Substances* will, as they are endu'd with the Degrees of those Qualitys, produce this Operation. Chap. 12.

Operations of fœtid Medicines explain'd.

And that these Medicines (which by their nimble Effects in nervous Diseases, make it evident that they immediately operate upon the Spirits) do perform this by altering or diverting the Motions, or the determinations of the Spirits, will appear evident from a consideration of the undoubted Effects of such Medicines. For it is observable, that all those Medicines which so immediately betray their Effects in nervous Diseases, are of *volatile, nimble, strong or fœtid Parts*: And in order to produce their nimble Effects, they must be either apply'd to the Nose, or be receiv'd into the Stomach and Bowels; in which Regions the nervous Fibres are readily affected from the Medicines. It is true, some fœtid things apply'd to the Navel, as *Galbanum*, &c. are sometimes of Efficacy in these Diseases. By which it must be concluded, that the Parts there are more pervious, or that the Smell only produces the Effect. And it is farther observable, that those nervous Disorders which have their Origin in the Trunk of the Body, are best affected from these Medicines, as appears manifest from the great and sudden Advantages from *Castor and fœtid Gums* in those nervous Cases, term'd *Hysterical*. And it is likewise observable, that the Nerves, dispers'd thro the Trunk of the Body, communicate. From which Observations it must be concluded, that the Disorders began by the Spirits in the lower

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Regions of the Trunk, ascending by the means of the Nerves, are, by the force of those powerful Emanations flowing from these kind of Medicines, which then may be suppos'd to remain in the Stomach, or in the upper Bowels, repel'd and drove back, and so by that their Motion upward is hindred. And what farther confirms this, is the Inefficacy of these kind of Medicines in nervous Diseases, which begin in other Parts, as is manifest from those we call *Epilepsys*. But of the Operations of these sort of Medicines, and the Reasons of their happy Effects, see more in my

Specimen Physico-Medicum de Corp. Human.

Operations of Opium.

That some Medicines likewise operating immediately upon the Organ, do quiet and compose their Motions, appears evident from the nimble Effects often perceiv'd by Opium: for all those surprizing Operations attributed to that Drug, or its Preparations, ultimately consisting in quieting the Motions of the Spirits; and some of these being too nimbly perform'd to be effected in any other ways, administer an occasion to conclude, that they are done in the manner explain'd.

But if the young Student is desirous to be farther inform'd concerning the Powers and Efficacys of Opium, he may read

Willis Pharmaceut. Rational.
Specimen Physico-Medicum de Corp. Human.

Or if he is not satisfy'd with these, but is desirous to carry his Enquirys further, he may consult

Doringtus

Doringtus de Opii Usu & Quantitate.
Wedelii Opiologia.
Freitarius de Opii Natura.
Tullingii Anchora Salutis Sacra, seu de Laudano Opiato.

Divers Operations of Medicines in the Blood hinted at.

6. Medicines exerting their Powers and Operations amongst the Fluids, must necessarily be receiv'd and mingled with the Blood; and by that means altering the Motions, Determinations, or Positions of the Particles constituting the Mass, the Propertys or Qualitys of the Blood (if such were to be discover'd, since the Qualitys of all Bodys arise from the Motions and Positions of the constituent Parts) must likewise be alter'd: however, the Offices and Uses of the Blood, that is, the Motions and Separations, will. And that Medicines really do this is notoriously manifest, in that some of them procure Salivation, as Mercury, and its Preparations; some pass by Urine, and alter the Qualitys of that, as Turpentine, Balsam, Capiva, *&c.* whilst others sometimes do evaporate thro the Skin in dewy Sweats, as *Lapis Contrayervæ, Bezoart. Mineral.* &c. Some Medicines again seem to strengthen the Union and Confederacy of the several Parts of the Mass, as *Margarita*, Coral, but above all Steel, *&c.* Some perform this by being, as it were, necessary Medicines to unite the different Parts, as lixivial Salts of all kinds; whilst others seem as it were to bind and tie them together, as what we term *Astringents, viz. Bole, Rad. Tormentillæ, Bistert. Lap. Hematit. Crocus Martis*, &c. Some seem to in-

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tend their inteſtine Agitation, as moſt Aromatics, *viz.* Cloves, Cinnamon, *Rad. Galangæ*, *Cort. Winteran*, &c. and others not to increaſe it, as *Suc. Aurant. Lymon. Sem. frigid. Major. &c.* Some ſeem again prepar'd to divide and diſſolve the Union and Mixture of the Parts, and by that means to inlarge the Separations without much Inequality, as moſt Fruits, *viz.* Apples, Cherrys, Pears, Goosberrys, *&c.*

Little ſaid of the real Operations of Medicines before Dr. Willis.

7. The young Student will not find much ſaid concerning the Operations of Medicines (altho he may meet with multitudes of large Encomiums on their Virtues and Efficacys) that will be agreeable to the Theory of Diſeaſes, as built upon modern Experiments and Anatomical Diſcoverys, either in modern or antient Authors. It is evident the Antients could not ſay much of them, being ignorant of ſome Truths neceſſary for the forming of ſuch; and the Moderns have ſhew'd that reſpect to thoſe who liv'd before them, as for the moſt part to acquieſce in their Sentiments concerning the Uſes and Advantages of Medicines, altho they have departed from them in other things, upon which the uſe of Medicines depends. Dr. *Willis* was the firſt, if not almoſt the only Perſon who has launch'd out into that Enquiry; for which reaſon there being but few Authors who have treated upon this Head, I ſhall only refer him again to the two Books often mention'd, *viz.*

Pharmaceut. Rational. par. 1, 2.
Specimen Phyſico-Medicum de Corp. Human. & ejus Morbis.

8. The

8. The *Galenists* did suite their Notions of the Virtues and Efficacys of Medicines to their Hypotheses and Theorys of Diseases. For as some Diseases were deriv'd from *Intemperies*, by which was intended the Prevalency or Predominancy of some of the first Qualitys; so were the Virtues of Medicines, by which such were to be remov'd or subjugated, founded in such Qualitys; which Qualitys were to be divided into four Degrees for the better accommodating them to such Uses. For the tyrannizing Qualitys in such Diseases were, according to that Doctrine, to be beat down or weakned by their Contrarys. Thus Heat was to be contemperated by Cold, Moist by Dry, and the Diseases form'd by the various Mixtures of these, to be remov'd by the Contrarys in proportion to the Vices of each. Diseases proceeding from a Peccancy or Redundancy of the Humours, requir'd Evacuations; and the kinds of Evacuations were suted to the nature of such Humours, and accordingly such were directed as discharg'd the peccant Humour.

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Galenists *adjusted the Effects or Faculty of Medicines to their Hypotheses.*

And in that some Diseases were seated in particular Parts, they appropriated Medicines for the use of such Parts; and these kind of Medicines were said to have peculiar Facultys to do this: And the nature of such Diseases sometimes requiring Evacuations, and sometimes Alterations; therefore, agreeable to this, they invented Medicines of both sorts. And for this purpose some had *Facultys* of drawing from or purging away from the *Head*, *others from the Liver*, *Spleen*, *Womb*, &c. Again, others had *peculiar Fa-*

Galenists *appropriated Medicines to the several Parts.*

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cultys of altering those Parts, without any discharge from them. And the variety of Complications, which naturally arose from the *Causes*, *Symptoms*, *Parts affected*, *Redundancy of Humours*, &c. in Diseases, naturally usher'd in those numerous Compositions, with which the learned Labours of former Ages plentifully furnish us; for a diversity of Ingredients (which in themselves had particular Efficacys and Virtues, that is, Faculty of respecting this or that Part, or discharging or subjugating this or that Quality or Humour) being thus mingled and compounded together, that Composition was sometimes suppos'd to partake of as many Virtues as it had Ingredients endu'd with singular Facultys, and so was sometimes commended as a Remedy of admirable use in most Diseases.

But if the young Student thinks it a proper labour to search into the Writings of former Ages, to find out what they writ concerning the Operations of Medicines, he must consult their practical Writings; in divers of which he will find a multitude of Medicines represented, as partaking of such admirable Virtues as will justly raise his Wonder, and yet little or nothing (notwithstanding those profuse Praises) of their Operations: For our Ancestors seem to have had that regard to all the Productions of this Terraqueous Globe, as to affix some wonderful Virtues to all the Parts of it; there being but few Members either of the *Vegetable*, *Animal or Mineral* Kingdom, but are represented as endow'd with certain stupendous Virtues, for the removing or curing

ing some sort of Diseases; that should we intirely give up our Belief (upon their Authoritys) to the Wonders perform'd by some Medicines, we may justly stand amazed why great and rich Men have ever died. Chap. 12.

And notwithstanding all the Care and Pains of learned Men, in recording the admirable Virtues of so many Simples; yet all they have writ concerning their Operations seems to me to amount to no more than this, *viz. That first Qualitys are to be alter'd or lessen'd by their Contrarys*, and that *some Substances have peculiar Facultys of doing Wonders.*

The Chymists, like the Galenists, suted their Opinions of the Efficacys of Medicines to their Principles.

9. The Chymists, altho they widely differ from the *Galenists*, yet having consider'd Diseases as form'd by the prevailing Power of some of their Principles above the others, have suppos'd the Operations of Medicines to be much in the same way, *mutatis mutandis*, as the former. For as the Chymists do ascribe the Efficacys of their Medicines to their *Salts*, their *Sulphurs*, their *Spirits*, &c. so the *Galenists* do the Virtues of theirs to the four first Qualitys, *viz. Hot*, *Cold*, *Moist*, and *Dry*, and their several Degrees. And as the *Galenists* ascrib'd the Efficacys of Medicines in the relieving particular Parts, or in the curing particular Diseases, to Facultys in such; which it is plain they did not understand, because they could not, or durst not explain: So the Chymists, when they apply'd their Principles to the relief of this or that Disease, or part of a Human Body, pretended

Chap. 12. to assign a reason of their doing this by some hard and bombastical Expression, which they did not seem to understand themselves, and so could not impart to others.

CHAP.

CHAP. XIII.

All the Preliminarys to this Art gone thro, the young Student is now to apply himself to Practice. Two things necessary to be observ'd, viz. *The State of the Diseas'd, and the Powers of Medicines. Rational Practice founded in these two things. 2. Some Prejudices to be remov'd for the understanding these Relations. Some Examples produc'd. The Substance which makes Blood is naturally chang'd several times. 3. Some Prejudices from School-Terms. From the Doctrine of Qualitys. Antients and Moderns agree in the general about Qualitys being the Causes of Diseases, altho they differ as to the kind of Qualitys, and in their Modes of explaining them. 4. What the Guides in the use of Medicines. What already prov'd. Indications from either Blood or Spirits. 5. Offices of the Blood. Motions and Separations knowable to us. Circular Motion of the Blood how alter'd. Indications from that. Medicines. Authors, Steel.* Cortex Peruvianus. *6. Of the Separations. Indications from them. Authors. Vices of Separations reduc'd into Classes. What they indicate. Preternatural Separations, Critical, Symptomatical. Disorders of the Spirits. Indications. Two Motions appertain to the nature of the Spirits. Medicines. 7. Cautions, that altho the Blood and Spirits are separately treated, yet they are usually conjointly affected. Of the promiscuous use of Blisters in Fevers. How introduc'd.*

THE

Chap. 13.

The Preliminarys gone thro.

1. THE young Student having gone thro the former Preliminarys, which are preparatory for the fitting him to understand that Godlike Art which he purposes to practise; in the next place he is to be inform'd in the last and finishing part of it, which is the true and proper use of Medicine. In order to his forming a right Judgment of this, upon which the Safety of his Patient, the satisfaction of his own Conscience, and even his Honour and Reputation stand, it will be incumbent upon him in his Practice to have these two things always under his Consideration.

Two things to be observ'd in Practice, viz. State of the Diseas'd, and Power of the Medicine.

First, The diseas'd Body in all its Circumstances, without any regard to the false Glosses given by general words, or to the Prejudices too often arising from Hypotheses.

Secondly, The Powers and kinds of Operations of the Medicines he intends to use: And in this he is to take special care that he is not misled by the celebrated Virtues ascribed to them by Authors in the curing Diseases, instead of their Operations.

For by a serious consideration of these two things, he will be led into a choice of such Remedys, as will bring Advantages, but no Mischiefs, to those committed to his Care; whereas if he neglects these, he must wander in uncertainty, in that he can have no Rules from Nature to guide him in his Proceedings. He may, it's true, have sometimes Advantages ensuing his Directions (for Men do not die in all Sicknesses) but such

such must be from Nature's Kindness, or at least be more the Effect of Chance than Judgment. For how can Men with any certainty make choice of an Agent, which is in its nature qualify'd to produce such Effects in the Patient as they expect, unless they have a previous knowledg of the Powers of the first, and Circumstances and Disposition of the last? Without this it is very unlikely they should be capacitated to form a tolerable Judgment of the Consequences which will ensue, upon the use or application of such an Agent to such a Patient. And if they cannot do this, I do not apprehend how they can administer Physick either for the safety of the Diseas'd, or the quiet of their own Consciences. For since all Sickness or Diseases originally consist in some Vice or Disorder of the Parts in a Human Body (as has been prov'd) it's plain such Vices or Disorders are never to be corrected or remov'd by Medicine, unless the Operation is so adjusted to their nature, as thereby to amend them: and this is never to be foreknown, but by the two Considerations above-specify'd. And for this reason the principal Excellency in this useful Art consists in one single Article, *viz.* in rightly apprehending the Relation which should be between the Powers of the Medicine, and the Circumstances of the Diseas'd; for whenever this is rightly understood, Men cannot well err in their Applications. Chap. 13.

2. But before I proceed to explain the relations which should be between the diseas'd Parts and the Medicines, it may not be improper to forewarn the young Student of some

Prejudices to be remov'd for the understanding these Relations.

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some Prejudices which, by reason of their Popularity, may otherwise be too apt to cloud his Understanding in the Discovery of such things as may be of use to him in Practice, *viz.* that if he seriously proposes to be useful to Mankind in this Art, he must not take for fundamental Truths any precarious Principles, unprov'd Elements, first Qualitys, Alkalys, Salts, or Acids (notwithstanding common Usage has in a manner licens'd that Method) but he must ground his Reasoning upon such things as have the clear Testimony of his Facultys, and are observ'd in that very State or Condition in which he is to consider them; because when once remov'd out of that State, they must be depriv'd of some Propertys which were then only peculiar to them, notwithstanding they may retain the same name.

Blood concealed from our View.

To apply this to our present purpose, that so the young Student may with the less difficulty comprehend the use of it. It is certain the Blood (so long as it continues a part of a living Human Body, and in that State only I consider it) is wrap'd up and conceal'd under the thick Coverings of the whole Body; and by that means our Facultys are excluded from any Discovery of the Qualitys, any farther than as they appear to us by the helps or means of such Parts of the Body as interfere between the Blood and our Senses: And such interfering Parts do only reveal to us the Heat of the Blood; for as to its *Taste*, *Colour*, &c. our Senses have no opportunity of distinguishing them. Wherefore as our knowledg concerning the Qualitys of the Blood is confin'd to the Heat only

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only (for as to the circular Motion it relates not to this Inquiry) so we cannot safely reason either concerning its true Nature, or concerning its Faults or Disorders from any other Quality; because we cannot know what they are, or in what Proportions they should be (if there were such) either to constitute its true Nature, or to cause or occasion its Faults or Diseases: And when once the Blood is remov'd from under these Coverings, it is no more a part of a living Human Body, and so comes not under our care. Neither can we safely reason of the true nature of the Blood whilst it runs in our Veins, from those Qualitys which appear in it after it is remov'd out of them, whether we consider such Qualitys as relate to our *Sight*, *our Taste*, *or our Touch*; because we want Facultys to discover *which*, *what*, *or how many of them*, *and in what Quantitys or Degrees*, should be in it, to make it fit to perform such Offices and Uses as belong to it while it is a part of a living Human Body. Furthermore, it has been already hinted in this Discourse, and fully prov'd by divers Authors there quoted, that the Qualitys of all Substances proceed from certain Dispositions of their constituent Particles, and consequently alter as that does: and it is certain that Disposition of the Particles, from whence the Qualitys belonging to the Blood arise, must necessarily be alter'd, when once the Blood is remov'd from the Circular Motion. It seems therefore not improbable, that the Qualitys may not be the same when it is out of the Veins, as they were when it was running in them: And what

The Qualitys not to be discover'd.

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What makes Blood, is naturally chang'd several times.

what seems to countenance this Conjecture in a more particular manner, is, that the Qualitys of the Blood bear no resemblance neither to those Substances out of which it is prepar'd, nor into which it may be resolv'd; and are likewise chang'd several times in the Body, *viz.* in the Stomach, when such Substances we ingest are there digesting; in the Passages of the Chile, before that enters into the Subclavian Veins, and afterward in the Blood; and then again by the secretory Vessels. And therefore it is not unreasonable to infer, that it may undergo other Alterations, when drawn out of the Veins, and remov'd out of the reach of the Circulation; and so no Arguments can be drawn concerning its Nature, when in the Body, from what appears in it when out.

Blood to be judg'd of by its Offices.

The only method then we have to judg of the true Nature and State of the Blood, and consequently of its Vices or Diseases, is only by its Offices, Uses and Operations, in that there is nothing else which can fall under our Examination: And therefore it is to these, and not its Qualitys, we must have recourse to comprehend the forementiond Relation between the Medicine and the Disease; for notwithstanding we often reason concerning the Relations and Agreements of other Substances by their sensible Qualitys (and so are apt, by way of Analogy, to do the same about the Parts of our own Bodys) yet it is plain, even in other Substances, we can only reason from their Qualitys, whilst they remain in that State only in which such Qualitys are found: for instance, we can infer nothing from the Acidity

dity of Vinegar, as a Quality appertaining to that Liquor so nam'd, longer than that Acidity is found in that Substance; for during the time that Substance was sweet Wine, or when that Acidity shall by any way be remov'd or destroy'd, there can be no Efficacy arising from that Quality, altho the Substance remains; and so nothing can be infer'd from the proportion of that Acidity which was formerly in it, when it is once remov'd. Chap. 13.

Prejudices from general Words.

It will perhaps appear to the young Student no easy Undertaking, and 'tis like he may think it unnecessary, to strip his Understanding of the Prejudices which the use of general Words, and the receiv'd Doctrines of Qualitys, must necessarily have introduc'd in the use of Medicines. For the interrupted Practice of Physicians till this present Age (and even in this few only have departed from it) in forming Diseases into Classes, and treating of them in general words, will gently and imperceptibly usher into his Mind, unless prevented, an Opinion of there being some common Natures: and accordingly altho those Diseases, which are comprehended under the same name, may differ in some few Symptoms; yet agreeing in their Natures, are to be treated in the same Methods. And as this Prejudice, as receiv'd from the Antients, us'd by most Moderns, and confirm'd by the judicious *Sydenham*, must therefore be powerful; so it will be injurious, in that it will lead him to decline the use of Indications, and the immediate Circumstances of the Disease'd. And how many Lives have been thrown a-

way

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way by this unhappy usage, in that Disease only, which consisting of a Pain in the Side is vulgarly term'd a *Pleurisy*, by repeated Bleedings, where Men have not been guided by the Indications, I humbly offer as a consideration not unworthy those who have observ'd such melancholy Effects: As likewise in those sudden Cases which (Men being depriv'd of Sense and all voluntary Motion) are promiscuously term'd *Apoplexys*, by the same methods, and in a multitude of other Instances.

Prejudices from the Doctrine of Qualitys.

3. The Prejudices likewise from the Doctrine of Qualitys must necessarily be very great, in that they are deriv'd from the Antients, and confirm'd by the Moderns. It is true, in the use and choice of Qualitys they have extremely differ'd: The Antients founded their Doctrines upon the four first, *viz. Hot*, *Cold*, *Moist*, *Dry*, which refer'd to the *Touch*; the Moderns to Salts, and Sharps, and their Degrees, which respect only the *Taste*. However all of those Qualitys, when consider'd as the Powers by which Medicines operate, can only respect a Human Body as a mere natural Substance, and so operate by destroying their Contrarys, and are in no wise calculated to affect it, as it is particularly organiz'd into a Human Body, and so differs from all other Substances: which is most apparent, in that the Efficacys of such Qualitys consist in the destroying their Contrary, without any manner of regard to their affecting this or that Organ or Part of a Human Body; and Diseases only appertain to it as it is such a Body. The Mischiefs flowing from these Prejudices must

Antients and Moderns agree in making Qualitys the Cause of Diseases, altho they differ in the kinds.

be

be great, in that this Doctrine will naturally incline the young Student to have these Qualitys too much in his view, and by that means divert his Thoughts too much from observing or considering the Vices, Faults, or Alterations in the Natures, Offices, or Uses of such things as should direct him in the use and choice of Medicines. For instead of observing the Disorders or Alterations in the Motions, and Separations of the Blood, or the different Tumults and Irregularitys of the Spirits, his Thoughts will be hurry'd away about the predominancy of this or that Quality, and about the use of its contrary to destroy it. Chap. 13.

What to be the Guide in the use of Medicines,

4. But having thus forewarn'd the young Student of the Mischiefs which may arise from these generally receiv'd, altho precarious Doctrines; I shall now proceed to remark the Methods of discovering the Relation which should be between the Disease and the Medicine, in order to render the use of the latter safe and advantageous to the former. This Discovery is not to be made by any Chimera of our own or others, but by a heedful Observation of the certain Actions, Offices and Uses of the Parts of a Human Body (so far as we have Facultys to discover them) on the one side, and the Ways and Methods by which Medicine can be observ'd to have a power of operating upon the Parts of a Human Body, on the other. And this Method was antiently approv'd and recommended, as the young Student will find if he but reads the Latin *Hypocrates*, viz.

Au. Cornel. Celsus de Re Medica.

Chap. 13. By whose Labours he will perceive how different his Sentiments were of those things, from what has been generally receiv'd amongst Physicians from his time till this present Age.

It has already been demonstrated from the *Nature*, *Actions*, *Offices*, *Functions*, and *Uses* of the Parts of a Human Body, that all the Faults, Vices, Changes, or Infirmitys, which are *internally form'd or produc'd in a Human Body*, are originally and in themselves founded in or deriv'd from the Fluids; under which term are compris'd the *Blood*, *Spirits*, *Lympha*, and all other *secreted Juices*.

It has likewise been shew'd from the *Form*, *Structure*, *Connexion* and *Communication* of the Parts of a Human Body, that only the Blood, Spirits and Juices in the Stomach, *&c.* are to be immediately operated upon by Medicines.

It hath also been observ'd, that the Powers, Virtues, Efficacys, or Operations of all Substances us'd for Medicines, consist either in procuring Evacuations, or making Alterations without any discharge.

Indications from either the Blood or Spirits. From these things thus premis'd, it will naturally follow, that the several Affections of the Blood or Spirits (for the secreted Juices, unless what are in the Stomach, can be only secondarily affected) must indicate to the young Practitioner not only what kind of Medicines, *viz.* whether such as evacuate, or such as alter, but also the different sorts and kinds of such Medicines as are to be administred, for the correcting or altering their Faults or Disorders.

5. All

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Motions and Separations of the Blood only known by use.

5. All the knowledg we can have of the Blood, so long as it remains a part of a living Human Body, and so far as it is cognoscible to us, is founded in its Motions and Separations; and consequently all the Powers and Operations of Medicines (so far as they respect the Blood, and so far as they are to be observ'd by us) consist in some way affecting one or more of these Propertys. To make therefore a right Judgment concerning the use of Medicines in Diseases of the Blood, we must consider how the Motions or Separations of the Blood can be affected from the power of Medicines.

Circular Motion of the Blood.

To comprehend this, we must consider that the Circular Motion (for of the natural one I shall speak when I treat of the Separations) is made by an Impulse from the Heart: And that the Vices or Faults in this Motion, either proceed from the Vice in the Organ which gives the Impulse, or from the unfitness of the Blood to run in Circulation. But the first of these does not relate to our present Inquiry, it being the second that we are at present to observe.

As it is manifest there is a certain degree of Velocity in the Circular Motion of the Blood, by which it is exactly adjusted to the Health and Use of the whole Body; so it is certain, whenever the Blood swerves from this degree of Velocity, it cannot regularly perform such Offices. And this it may do in two different ways, *viz.* either when the Velocity of the Circulation is so increas'd as to exceed the natural State, or when it is so depress'd as to be under it.

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What is the just degree of Velocity in Circulation in a healthful State, may be learned from Experience, by observing the Pulse, the common Index; and that, being once discover'd, is to be the Standard to try the Excesses.

Whensoever the Circular Motion is alter'd from the Blood it self, it must proceed either from some Increase or Defect in its Quantity, or from some Vice or Fault in its Nature, Constitution or Mixture.

Circular Motion intended.

Whensoever the Circular Motion is so intended, that Diseases are created by its Violence, the Quantity of it must be increas'd; in that being mov'd by repeated Vibrations of the Heart, it could not be so forcibly impell'd as to injure the Health of the Body, was there not a Quantity in full proportion to the amplitude of the Vessels, to be so successively drove forward. And whensoever this happens, whether the Effects of its Violence appear upon the *Brain*, as it sometimes falls out in Cases term'd *Apoplectical*, *Lethargical*, &c. or upon the Sides, Breast, or any part of the Thorax, as often happens in what are call'd *Pleurisys*, *Peripneumonias*, &c. or upon the Joints or Limbs, as in what is call'd a *Rheumatism*; or upon any other part of the whole Body attended with Heat, Inflammation, and a strong and throbbing Pulse: it plainly directs, that as Diseases so form'd (for it matters not how denominated) proceed from a redundancy of the scarlet Gore, that Gore ought to be lessen'd. And since there is no Medicine endu'd with Powers directly to lessen the Quantity of the Mass (altho they may this or

that

that part of it) and 'tis by the Quantity only the Body is diseas'd; therefore Medicines in this case seem to be of no wonderful use, in that all Medicines either procure Evacuations or Alterations: and there being none in their Nature suted to make this kind of Evacuation, and Quantity being always to be lessen'd, not alter'd, it is plain there can be none of any direct, tho there may be of collateral use. Chap. 3.

But if the Circulation is alter'd from a defect in the Quantity (as it sometimes happens from immoderate Hæmorrhages, it matters not from what part) it is plain its Quantity must be restor'd by proper Aliments, and not by Medicine, which can have no direct share in that Office, tho it may in fitting the Blood to receive and retain such Nourishment.

But if the Circular Motion of the Blood become too slow and languid (of which the Pulse is the Index) by reason its Nature is so chang'd that it will not readily run in Circulation; this must necessarily proceed, in that the Parts which constitute the Mass someways break and divide from each other; the more crassid and tenacious, parting from the other, move and roll but slowly forward in the large Vessels (which by reason of their amplitude permit of this) whilst the others creeping thro the small and meandring Capillarys, wander out of their usual Tracts. And as this Error in the Circulation is frequently founded in the looseness of the Crasis of the Blood, or a sort of Discord or Disunion amongst the Parts; so it must plainly be reliev'd by Me-

Chap. 13. dicines, whose Operations exagitate the Parts of the Mass, and so help to restore and preserve the Mixture. But in that this unhappy State of the Blood sometimes seems to proceed from a sudden and unexpected Cause, and sometimes only to arise from slow and unperceiv'd ones; therefore it is usually distinguish'd into what we term Acute or Chronic Diseases: The first, which arise from this kind of Blood, are ordinarily compris'd under the term *Fevers*, and are usually treated as either *Epidemical*, *Malignant*, *Pestilential Fevers*, &c. the last as *Scurvys*, &c. Medicines which in their Operations respect the state of the Blood are most Vinous and Aromatic Substances, whether by Authors dignify'd with the Titles of *Cardiacs*, *Alexipharmics*, *Sudorifics*, &c. the usual and modern Forms of which, as they are adjusted to that state of Blood called *Fever*, as likewise their Quantitys, Doses, Methods, and Times of administring, may be learnt out of these few following Authors, under the Heads of Fevers Pestilential, Malignant, Epidemical, Pestis, *&c. viz.*

Laz. Riverii Praxis Medica.
Willis de Febribus.
——— *Pharmaceut. Rational. par.* 1.
Praxis Mayerniana.
Etmulleri Opera Practica.
De la Boesylvii Prax. Med. libr.
Fonseca de Febribus Epidem.
Pet. Salius de Febre Pestilent.
Th. Minadous de Febre Maligna.
Laurentius de Peste & Febr. Pestilent.

Diembrochius

Diembrochius de Peste.
Sim. Paulus de Febre Malign.
Platerus de Febr. &c.

And as these kind of Medicines seem to be nimble in exerting their Powers amongst the Parts of the Blood; and for that reason have been usually administred where the parting, breaking or dividing of the Parts of the Mass are occasion'd by any sudden or violent Cause; for example, in such Diseases as are call'd Fevers, *&c.* so *Steel*, whose Powers are not so nimble, but more lasting, is administred in such Cases where the Circulation is languid, in that the Crasis breaks for want of Agitation, as happens in slow and chronic Diseases: The Forms, Quantitys and Methods of giving Steel may be excellently learnt from the judicious *Sydenham* in *What kinds of Medicines.*

Dissert. Epistol. de Morbis Chronicis & Hystericis.

And a variety of modern Forms, Compositions and Preparations out of the

Pharmacop. Bateana.
——Augustina Reformat. per Zwelfer, &c.
Fullers Phar. Extemp.
Willis de Morb. Convulsoriis & Scorbuto.

The Efficacys and Virtues of this Mineral, in a great variety of Preparations and Compositions, the young Student will find wonderfully applauded in a multitude of Authors already nam'd, and its Operation observ'd and demonstrated in *Efficacys and Preparations of Steel.*

This Circular Motion of the Blood, sometimes by a fault in its own nature, intends and remits, increases and depresses by Intervals; and then evidently requires some Medicines, whose Operations are such as will keep it in one continu'd state: And the *Cortex Peruvianus* being the only known Drug enrich'd with this Power, it will behove the young Student to be inform'd of its use. The Forms and Manners of giving it he will find in

Cortex Peruvianus.

Dr. Sydenham Observat. Medicæ; as also in his *Epistol. Responsoria.*
Tabor's *Secret of curing Agues*; as likewise in
Tractatus de Quinquine.

But its genuine Operations are observ'd and explain'd, whereby the Times and Reasons of its use may be securely collected, in

Specimen Physico-Medicum de Corp. Human. & ejus Morbis.

Separations natural or preternatural.

6. The next thing to be observ'd, in order to discover the Relation between the Power or Operation of the Medicine, and the diseas'd Body, is the Separations from the Blood, which are of two sorts; the one of them natural, the other preternatural: the natural Separations are the several Juices which are filtrated and divided from the Mass by the secretory Vessels.

The preternatural Separations are such Humours, Parts or Juices as are thrown or divided

divided from the Blood, and then remain in some Region or Part of the Body, which is not by Nature adapted or prepar'd for that purpose.

What are the true and genuine Marks or Propertys of the Goodness of these natural Separations, are best learnt by observing them in a perfect and healthful State; that is, when all the Parts of a Human Body regularly perform their Offices: However, since such have a Relation to the other Parts, it is plain, their Offices may be either perverted when they are too much increas'd, or too much decreas'd in their just Quantitys; or when they are alter'd or vitiated in their Qualitys or Propertys.

The secretory Vessels being only passive in this work of Separation, the Materials for such Juices being brought to them by the circulating Blood; it cannot therefore often happen, that all such Juices, which are so unlike in their Propertys, should at the same time be enlarg'd: However, when the Blood is so dispos'd that large Quantitys of these Juices pass from it, some of these sometimes will be disproportionably increas'd; which happens by reason of some Posture, Gesture, or Circumstances of the Body, the secretory Vessels being unequally supply'd, at least such Juices have a fuller freedom to pass the Pores of some of them than of others; and accordingly the Quantitys of such then often alter in some proportion to such Circumstances, as not infrequently may be observ'd to happen in some Disorders of the Blood term'd Fevers, between the Secretions by the Kidneys in Urine, and those by the Skin

in

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in Sweats; and likewise between these, and more especially the latter, and those made into the Bowels, which appear in Loosnesses and Vomitings. And as therefore this unnatural Increase, in the Quantitys of these natural Separations, must proceed from the Vice or Fault of the Blood; so it is plain, the correcting or removing these is to be effected by the use of such Medicines, whose Powers or Operations are of such a nature, as may hinder the Mass from this colliquating and breaking, and so yielding disproportionable Quantitys of Materials to be filtratred thro these Vessels for such Juices. The Medicines which seem to have the greatest Efficacy in performing this, are such as have been prescrib'd, recommended and us'd in restraining the several kinds of increas'd and alter'd Separations made by any kind of secretory Vessels, and may be compris'd under the kinds of Strengtheners and Astringents. Numbers and Varietys of which, both single and compound, in a diversity of Forms, with their Doses, Methods, and Times of giving, may be collected from these few Authors, under the Heads of *Catarrhs*, *Diarrheas*, *Fluores albi Mulierum*, *Gonorrheas*, *Diabetes*, *Diaphoresis nimia*, &c. *viz.*

Medicines hindring Separations.

Willis Pharmaceut. Rationalis, par. 1.
Etmulleri Opera Practica.
Riverii Praxis Medica.
Sennerti Praxis Medica.
De la Boesylvii Praxeos Medicæ, lib. 1.

Medicines increasing Separations.

The natural Separations are very rarely all of them at the same time lessen'd, unless when

when by the rapidity of the Circulation the Parts of the Blood are so confounded and jumbled together, that few or none can disunite from the Mass to pass the Vessels for forming these Juices. When this happens, such Medicines are plainly requir'd, as have a power (if there are any such) to retard the Violence of this Motion, by unlooſning the Crasis, and dissolving the Mixture; the Medicines most promising for this purpose are *Acids*. But a great variety of Medicaments, which seem to be level'd at this Intention, the young Student may collect out of the Writings of practical Authors, where they have treated of *Synochal*, *Putrid*, and *Inflammatory* Fevers, as in Chap. 13.

Sennertus de Febribus.
Platerius de Febribus, and a multitude of others; as
Galen. de Ration. Curand. Inflammat.
Conringius Comment. in lib. Inflam.
Sylvius de Febribus.
M. de Sancta Sophia de Febribus.
G. de Sancta Sophia de Febribus.
Fernelius de Febribus.
Willis de Febribus.
Praxis Barbetiana.
Bartherouc Pyretologia.
Fumanellius de Febr. Curand.
Morton Pyrelogia.
Ochus de Febribus.
Poterius de Febribus.
Rolfinchius de Febribus.
Manelphus de Febribus.
Hercul. Saxoniæ de Febribus.

Deusinghius

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Deusingius de Febribus.
Sydenham Observationes de Morb. Acut.
Talpii Observationes Med.
Salmath. Observationes Med.
Pet. Foresti Observat. & Curationes Medicinales de Febr.

Sometimes some one of the Separations is only lessen'd or suppress'd, as perhaps that by the Kidneys, or that by the Pores of the Skin, or by the Bowels or Mouth; and then such Medicines are properly requir'd, whose Operations are to move or increase such Secretions: if that by the Kidneys, Diuretics; if that by the Skin, Diaphoretics; if those by the Bowels, Cathartic; if by the Mouth, Masticatory Medicines. Several Forms and Compositions, recommended for these Uses, may be collected out of practical Authors, under the Heads of the Affections of such Parts, as in

Riverii Praxis Medica.
Sennerti Praxis Medica.
De la Boesylvii Praxeos Med. vol. 1.
Etmulleri Praxis.

Separations alter'd in Quality. The Qualitys of the natural Separations are likewise sometimes so extremely alter'd, that they appear very unlike to what they are in a state of Health; but by reason of the great diversity of these Juices, and the variety of Alterations which may appear in each, it may not be improper to reduce such into some general Heads: And in that the Natures and Propertys of most of them are usually judg'd of by their Colours or Consistencys,

sistencys, therefore all their Vices may not be improperly reduc'd into two kinds. Chap. 13.

In the one of which their native Colours are become deeper, and appear turbid, and their Consistency term'd Thicker.

In the other their Colours are weaker and paler, and their Consistency thinner.

It is true, the Separation by the Skin, that is, the Sweat (in that it is not well to be collected) cannot be examin'd under these Heads; neither is its Nature any otherways to be learnt than as it steams out either in some Regions only, or thro the whole Body, or as it is experienc'd to be advantageous or useless to the Diseas'd.

In the first of these, *viz.* when the Separations appear of a deep Colour, they are usually lessen'd, as is obvious from the Urine, *Saliva* in the Mouth, and Excrements of the Bowels: and these usually appear so when the Heat and Circulation of the Blood is extended and increas'd; and for this reason are look'd upon as Diagnostics of that state of Blood term'd a *Fever*; and when they proceed from that, they plainly point out the same Medicines and Methods, as are already hinted at when they are lessen'd.

But when some one of them only appears of a deep Colour and thicker Consistency, whilst the others do not appear so much affected; it is rather to be ascrib'd to some Default or Obstruction in the Organ it self, or some nervous Disorder, by which the Separations are disturb'd.

The first of these evidently indicate the use of Evacuations, to be perform'd in such manner as the obstructed Organ may be affected

Chap. 13. fected by them: wherefore if those secretory Organs that are seated about the Trunk of the Body, or about the Passages leading to and communicating with it, be thus first in fault, and so by reason of their Situation may be affected by the Motions of the Stomach or Bowels, Purgers or Vomiters are requir'd. The several sorts and kinds of which that have pretended Virtues to purge *particular Parts*; as likewise Forms, Doses and Methods of administring them, may be learnt from the practical Authors already mention'd, under the Heads of the Affections of the Liver, Spleen, *&c.* as likewise in

Pet. Foresti Observat. & Curat. Medicinal. de Hepatis Affectibus, & de Lienis Morbis, &c.
Willisii Pharmaceut. Rational. par. 2.

But if such proceed from some Defect or Fault in a discharge from the Breast and Lungs, then they plainly require such Medicines as have power to help this Evacuation: a multitude of such as have been thought to be endow'd with such Virtues, as likewise the Forms, Methods and Doses, may be collected out of practical Authors, under the Heads of Affections of those Parts, viz. *Pleuritis, Peripneonomia, Asthma, Phtisis, Dyspnea, Orthopnea*, &c. particularly out of the same *Forestus, Willis, Etmullerus*, &c.

But if in the Urine Vessels, then such Medicines as purge that way, and are term'd *Diuretics*; variety of which may be found under the Affections of these Parts, *viz.* Kidneys,

Kidneys, Bladder, *&c.* as Stone, Gravel, Strangurys, Dysurys, *&c.* in the practical Authors above-mention'd, as likewise in *Helmont*, *Hartman*, &c. of that Tribe. Chap. 13.

The same may be observ'd of other Discharges, as the Menses, Transpiration, which are to be remedy'd by such Medicines as will remove them. Forms and Compositions of such may be seen under those Heads in most practical Writers, as *de la Boesylvius*, *Etmullerus*, &c.

But when the Colour of the natural Separations is too pale, and their Consistency thin, this plainly denotes a want of Agitation in the Parts of the Blood, in that the Parts slip away by these Vessels without carrying any Tincture from the Mass; and then denote the use of Medicines, which have a power to exagitate and move the Parts of the Blood, such as Steel and Bitters.

Preternatural Separations either Critical or Symptomatical.

Preternatural Separations are either Critical or Symptomatical; the first alway for the benefit of the Diseas'd, in that the Blood throws out the Parts which disorder'd the Body; the other brings no advantage to the Diseas'd, in that altho the Blood emits Parts from its Mass, yet it is not better'd by that: The first therefore is always to be incourag'd, the last not. The separated Matter of the first sort is always to be wasted, discharg'd, or evaporated from the Part where it is lodg'd. Separations of this sort are of various kinds and denominations; some are diffus'd about the whole Surface, and appear in Pimples, Pustles, *&c.* and are from their Forms and manner of appearance call'd Small-Pox, Measles; and these

Chap. 13. these again are branch'd into subordinate kinds, according as such kinds of Separations have been observ'd to be perfectly, or in part only, critical: and accordingly when those Separations upon the Skin, which are term'd the Small-Pox, are perfect and so critical, they are said to be *Variolæ Discretæ*; but when imperfect, and so not intirely so, *Confluentes*. The manner and method of treating these may be learnt from the excellent *Sydenham*'s *Observationes Medicæ*: But the Forms of Medicines which were suppos'd to have specific Virtues in these Diseases, may be taken from the few following Authors, under the Heads of *De Variolis & Morbillis*.

Sennerti Praxis Medica.
Riverii Praxis Medica.
Willis de Febribus.
Donatus de Variolis & Morbillis.
Jo. Chicotius Dissertat. de Variolis & Morbillis.
Cas. Bartholinus de Variolis Puerorum.

Others appear only in some part, and are term'd *Erysipelas*. Forms of Medicines appropriated for these Purposes may be seen in the same practical Authors, and particularly in

Ant. Fumanellus de Lepra & Elephant. Morb.
Minadous de Human. Corporis Turpitudinibus Cognosc. & Curand.
Haffenrefferus de Cutis Affectibus.
Hier. Mercurialis de Morbis Cutaneis.

Some

Some of these are likewise deposited in the Joints, and are call'd Gouts. The Methods and Forms of Medicines for this may be seen under the Heads *Arthritis*, *Podagra*, *Chiragra*, &c. in Practical Authors, more particularly in Chap. 13.

Th. Mayern de Arthritide.
Willis de Arthritide.
Seb. Tiberii Analysis & Historia Arthritidis vagæ.
Foresti Obser. de Arthritide.
Quercetani Concilia Select. de Arthritide.
Val. An. Mollenbroch de Variis seu Arthritide vaga.
Sydenham Dissertatio de Podagra.

Some again in Tumours, Swellings, *&c.* The Methods and Medicines of use in such may be collected out of Chirurgical Authors, *viz.*

Fabritius Helden. Observat. Chirurg.
Wiseman Observat. Chirurg.
Amb. Paræi Opera Chirurgica.
Sculteti Armamentar. Chirurg.
Foresti Observat. & Curat. Med.

In short, all critical Separations whatsoever seem to point out such Medicines whose Operations may assist the Blood, and not perplex and hinder it in this Work. When the Blood appears able to perform this, there does not seem room for Medicines; but when it is not, it must be assisted by such Medicines, as will gently help Nature in those very ways which she inclines to take;

Chap. 13. and therefore to divert that is really to perplex the Work, in which the Safety of the Diseas'd consists.

But when such preternatural Separations are only Symptomatical, whether they appear in the Surface, in Spots, Discolorations, Pimples, Rashes, *&c.* which, when accompany'd with dangerous Symptoms, are look'd upon and taken as Signs or Marks of Malignant or Pestilential Diseases; or whether, when attended with no such Symptoms, they are only esteem'd the Marks of the Scurvy or foul Blood, *&c.* all these (tho in different Degrees) plainly denote such Medicines, whose Operation may preserve or restore the Crasis of the Blood. Forms, Prescriptions, Doses, *&c.* us'd for the first sort, may be seen in practical Authors, under the Heads of *de Febribus Malignis, Epidemicis vel Pestilentialibus, necnon de Peste, viz.*

Fonseca de Febribus Epidem.
Sim. Paulus de Febr. Malign.
Diembrochius de Peste.
Salius de Febr. Pestilent.
Willis de Febribus.
Sennertus de Febr. Malig. Pestilent.
Riverii Praxis, &c.

As likewise Forms and Methods for the last sort, under the Heads of Diseases of the Spleen, Hypochondrias, *&c.* in *Riverius, Sennertus,* and such practical Authors. But more particularly under the Head of *Scurvy,* in the several Tracts of

Willis

Willis de Scorbuto.
Eugalenus de Scorbuto.
Reusnerus.
Horstius.
Wierus.
Charlton, omnes de Scorbuto.

But when such Separations appear upon the Skin, without any ill Dispositions, and are call'd *Pruritus*, *Impetigo*, *Psora*, *Elephantiasis*, *&c.* it is plain they indicate no farther (being in themselves indifferent as to the Health of the Body) than to be destroy'd or remov'd in the Part. Applications for this purpose may be seen under the above-nam'd Heads, in Practical Authors, *viz. de Pruritu*, *Psora*, *Impetigine*, &c.

But when preternatural Separations appear by swelling, affecting, or spreading upon a particular Member or Members, or whether diffus'd to most Regions of the Body, and are term'd either Oedematous, Anasarcous or Flatulent: These, from their Natures, plainly point out the use of two sorts of Medicines; First, such as will evacuate, where Quantity is increas'd: and, Secondly, such as have a power to hinder the Blood from making these faulty and symptomatical Separations.

Forms and Compositions of both these sorts of Medicines, the young Student will find in practical Authors, under the Heads *de Oedemate*, *de Ascite*, *Anasarca*, *Leucophlegmatia*, *de Flatibus*, *&c. viz.* in *Sennertus*, *Riverius*, *Fernelius*, *Sylvius*, *Willis*, &c.

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But when these symptomatical Separations fall upon, and fix in a particular Tumour, whether, according to their different Appearances, they are term'd *Strumous*, *Scrophulous*, *Scirrhous*, *Cancrous*, &c. it is plain they require not only the hindring the Blood from making such Separations, but also Topical, that is, Chirurgical Applications. Medicines us'd for all these kinds may be found in plenty in practical Authors, under such Heads, *viz.* in

Wiseman's *Chirurgical Observations.*
Febrit. Hildani Observationes Chirurg.
Am. Paræi Opera Chirurgica Practica.
Barbet Chirurgia Practica.

7. Having thus hinted at the Relations that should be between the Operations of Medicines which exert their Powers in the Blood, and the Symptoms of the Diseas'd, as such are observ'd to be seated in or deriv'd from the Vices or Faults in the Motions or Separations of the Blood; that thereby the young Student might not want well-grounded help to direct and assist him in the Use and Application of such Medicines as may be of Safety and Advantage for the curing and removing such Evils or Diseases, under what Title or Denomination soever they have been by Physicians notify'd and distinguish'd:

It remains now that I hint likewise at such Relations as should be between the Operations of Medicines, directly exerted upon the Spirits (according as I have before

fore premis'd) and the Vices or Faults, Irregularitys or Disorders, which may be observ'd in the Spirits; that so the young Student may have the same helps to direct him in the true use of these as he has of the former. Chap. 13.

But that he may the better comprehend this Relation, I shall observe to him, that the proper Offices and Uses of the Spirits (so long as they continue a part of a living Human Body) are *Sensation and Organical Motion*, both of which are perform'd by their different Motions. In the first of which the Motion is begun by the Spirits residing in the Organ, and from thence continu'd back to the Brain, which is the Fountain from whence they proceed: In the other, the Motion is begun in the Brain, and from thence propagated to the Organ. The Diseases or Vices of the Spirits are observ'd by the Disorders or Deficiencys in these their Offices, and these Offices are perform'd by their Motions.

The Operations of such Medicines as directly affect the Spirits, consist either in their intending their Motions, or in diverting or changing their Determinations in Motion, or in their quieting, lessening or hindring them.

The first may be effected two ways, *viz.* either by cherishing and pleasing them, whereby they are invited to expand; and these kinds are term'd *Cordials*. Prescriptions of which may be learnt out of practical Authors, under the Titles of *Leipothymies*, *Syncopes*, *Animi Deliquia*, Affec-

Chap. 13. tions of the Heart, *&c.* in practical Writers, such as *Fernelius*, *Platerus*, *Sylvius*, *Sennertus*, *Willis*, *Forestus*, *Albertinus*, &c.

Or, Secondly, by such as have powers to irritate and disquiet the Organs, which are the residence of the Spirits, by which means the Spirits are provok'd into Motion: Of this sort are all Emetic, Cathartic, and Sternutatory Medicines. The same likewise may in some measure be observ'd of Epispastics; for these kind of Medicines irritating and disturbing the Organ, so disquiet the Spirits, that they are from thence forc'd into Motion. When therefore, by the Vices or Deficiencys in their proper Offices, of Sensation and Organical Motion, it appears manifest, they are too heavy and torpid in their Motion (not so much by a penury and want of them, which requires Cordials, as by some Oppression or Inability in their Natures) then the use of such Medicines are indicated as will irritate and disquiet them, and so contribute to the restoring them to their proper Offices. Forms, Doses, Methods and Quantitys of Medicines, which have been apply'd for this and the former purpose, may be learnt in practical Authors both antient and modern, under the Heads of Apoplexys, Lethargys, Coma's, Caro, Palsys, *&c.* as may particularly be seen in

Willis de Morbis Cerebri.
De la Boesylvii Praxeos Medicæ, vol. 2.
Etmulleri Opera Practica.
Foresti Observationes & Curat. Medicinal. de Morbis Capitis.

The

The second sort of Medicines which directly affect the Spirits, in that they have a power to divert, change or hinder the irregular Motions, Determinations or Tendencys of the Spirits, are denoted in Cases, where such Tnmults or Disorders appear in such Parts or Regions of the Body, as the Medicine it self may immediately reach to; or at least to such Parts as directly communicate with those affected by the Medicines. For if this cannot be done, the use of such Medicines must necessarily be ineffectual, in that their Effects cannot extend to Regions, where Instruments or Vessels are wanting to convey them; and such must be wanting, where the Nerves do not directly communicate, forasmuch as they are the only Vessels adapted for this use. Wherefore the use of these kind of Medicines seems not much requir'd, unless such Tumults or Disorders of the Spirits, as are to be diverted or suppress'd, begin or appear in such a Region of the Body, where the Parts affected may someways communicate with those very Parts or Vessels that receive or contain these Medicines: and those being the Ventricle or Intestines, and no other Parts directly communicating with the Ventricle and Intestines, but those only in the Trunk of the Body, and the Passages leading into these, such as the Nostrils, Mouth, *&c.* therefore these kind of Medicines can be of little use, but when such Disorders begin in some Parts of the Trunk of the Body. A variety of Forms of these Remedys, with their Doses, Methods of administring, may be seen in Chap. 13.

Chap. 13. practical Authors, under the Heads of Vapours, Hysterical or Hypochondriacal Affections, and more particularly in

Willis de Convulsionibus.
Sydenham Dissertat. Epistolar. de Affectione Hysterica.
Highmori Exercitat. de Passion. Hysterica & Hypochondriac.
Zecchias de Affectionibus Hypochond.
Sim. Petreius de Hysterica Affectione.
Ja. Sylvii Opera Medica.
Levinus Fischerus de Affect. Hypochondriaca.

The third Classis of Medicines, directly operating upon the Spirits, are such as have power to appease and quiet them; that is, to lessen and abate their Motions, when they appear to be nimble and quick in the performance of their several Offices; by which means the Organs are perverted in their natural Uses, as may be often observ'd by Vomitings, Loosness, Coughs: All which plainly point out the use of such Medicines as quiet and appease them. Forms for this purpose may be seen in practical Authors, under the Heads of Vomitings, Dysenterys, Diarrheas, Colics, Lienterys, Coughs, *&c.*

Willis Pharmaceut. Rational. par. 1.
De la Boesylvii Praxis, par. 1.
Lamoniere de Fluxu Dysenterico; as likewise in *Sennertus*, *Riverius*, *Etmullerus*, and other above-nam'd Authors.

The

The use likewise of Medicines of this Classis seems to be requir'd, where the Rage of the Spirits is restrain'd to a particular Part, and so creates Pains there, as in the *Bowels*, *Stomach*, *Head*, *Back*, &c. The nature of Pain, and the manner of its Production, the young Student will find explained in Chap. 13

Specimen Physico-Medicum de Corp. Human.

The only known Remedy that will mitigate or assuage Pain, by the means of the Spirits, is taken from Poppy, either our native one, out of which *Syrups*, *Decoctions*, *Waters*, *Extracts*, &c. are made; or from that which is foreign, which produces that Substance we call *Opium*. Preparations and Compositions of which may be seen in the common *Pharmacopeia*'s, *viz. Londinens. Bateana*, *Augustan*, &c. The Forms, Doses, and Use may be learnt from

Willis Pharmaceut. Rational.
Sydenham Observat. Medica.
Schedula Monitor. de Febribus; and from practical Authors, and those beforenam'd, who have treated of Opium.

But tho the young Practitioner is to be directed in the true and safe use of Medicines, from the Relation which their Operations have to the diseas'd Affections of the Blood and Spirits; because it is from the Operations of such, that their Vices, Faults, or Disorders (which are Diseases) are to be remov'd; And altho, for the understanding this

Chap. 13.

this Relation, I have briefly remark'd the Affections of the Blood and Spirits under two different Heads, and have likewise obſerv'd two ſorts of Medicines, which, by their different ways of affecting Human Bodys, plainly ſhew that they operate upon different Parts of it; the one exerting their Efficacys in the Blood, the other more immediately upon the Spirits: And tho I have, according to this method, in this Chapter, refer'd to ſuch Authors as will furniſh him with Forms, Doſes, and Directions for the giving of ſuch Medicaments as are in preſent uſe for ſuch Purpoſes; and have likewiſe, for his better Information, refer'd to ſuch Heads, as ſuch Affections of Blood or Spirits ſeem uſually to have been treated under; yet notwithſtanding this, the young Practitioner is not to infer, that the Blood and Spirits are for the moſt part ſeparately diſeas'd, but that there is ſuch a Relation between them, that it is not frequent, but that when one is diſorder'd, the other will be affected: and that therefore having diſtinguiſh'd between ſuch Diſorders, he may ſometimes, according to their Natures or Origins, reſpect one or both in his Practice. And in his Choice and Uſe of Medicines in Diſeaſes he needs not err, if he will only conſider that the *Spirits*, notwithſtanding the nobleneſs of their Uſe, are prepar'd out of the Blood; and that therefore their Natures cannot be ſo far chang'd, as to have their Offices and Functions generally perverted, unleſs the Blood is firſt alter'd or corrupted; and that therefore in the uſe of Medicine

Medicine, in such Diseases as seem by their Symptoms to respect both Blood and Spirits, he is not so much to regard the Affections of the Spirits as those of the Blood; in that the Spirits in such Cases are only secondarily vitiated. It is from this reason in all Cases, when the Functions of the Blood and Spirits appear at the same time injur'd, that the young Practitioner is to carry his Considerations in the use of Medicines to those, whose Efficacys are exerted in the Blood. It is true, in the administration of such Medicaments, whose Operations are principally perform'd by Organical Motion (as *e. g.* Purging or Vomiting) notwithstanding the Effects of such Medicines are presum'd to reach to the Blood, for the bettering or altering it; yet the State or Condition of the Spirits is not to be neglected, because they are the Instruments to be imploy'd in performing that Operation. And from hence it is, that in those Diseases of the Blood which plainly indicate Evacuations (in that the Blood separates or throws out its Parts) such Evacuations as are organically perform'd, *viz.* *Vomiting* or *Purging*, cannot always with Safety be administred; because, unless the Spirits are in a firm and quiet State, they will be very prone, when once irritated into violent and disorderly Motion by such kind of Medicines (as they must be by those which procure these Discharges) to fall into such Disorders as sometimes appear dreadful, and may prove fatal. And it seems not improbable, that the present promiscuous

Chap. 13. miscuous use of Blysters in all *Fevers*, may, in great measure, be deriv'd from the unhappy Effects which have been too frequently observ'd to succeed the use of these Organical Evacuations; foraſmuch as in divers Disorders of the Blood, which are promiscuously term'd Fevers, the Mass really tends to separate, that is, to throw off Parts; and then generally *Evacuations* may be advantageous. And Art has not as yet discover'd any kind of Evacuation, which, in such sanguinary Disorders, may be so safely us'd as Blisters; because those perform'd by Organical Motion, *viz.* Purging or Vomiting, have been forbid, for the Reasons already assign'd. And the inorganical ones, *viz.* those effected in the Blood it self, must not be us'd; foraſmuch as to procure Sweat the Parts of the Blood must be too violently exagitated, either by internal Medicines, or external Warmth, to be safely us'd in such Diseases; as has been demonstrated in *Specimen Physico-Medicum*. And Salivation cannot, in that from the nature of the Medicine, by which alone it is caus'd, it is dangerous to attempt it: And as for *Diuretics*, their Inefficacy, as being in these Cases mostly administred to the Diseas'd in Bed, has brought them almost into Disuse. And Blisters not having been observ'd to be attended with such unhappy Effects, have gradually acquir'd such a reputation in *Fevers*, as rarely to be omitted: For it being the certain nature of Human Blood, that when disorder'd, it will sooner or later despume it self (*vid. Specimen Physico-*

sico-Medicum) which will be either to the Advantage and Safety of the Diseas'd, or to his Disadvantage and Death: when the first happens, the Success is attributed to the Applications, and so Blisters have their share in the praise; when the last, Nature is blam'd, and the Medicine indemnify'd; and so Blisters producing no visible Mischiefs are excus'd. Chap. 13.

In short, in the consideration of the use of Medicaments, the young Practitioner may observe, that the Spirits can never be alter'd or mended except by the Blood, all such Medicines as seem immediately to operate upon them someways only affecting their Motions: And that therefore all Effects, which can arise to a diseas'd Body from the use of such Medicines, can extend no farther than to change or divert some Motion of the Spirits, and so for the present to correct or hinder some present Disorder in their Functions, but cannot cure or remove what is term'd the Disease, but only alter or check the Symptoms. It is true, it often happens that by repeating the use of such Medicaments, by which the raging Symptoms are often mitigated, the Blood has more time to alter and better it self, and so to acquire a natural and healthful State; and so the Disease, by the help of Nature, vanishing, is notwithstanding sometimes thought to be remov'd by such Medicines, when in truth they had little share in it.

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